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A CATALOGUE
OF THE
FLOWERING PLANTS
AND OF THE
FERNS AND THEIR ALLIES
Indigenous to Indiana



By STANLEY COULTER

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*With kind regards
Stanley Coulter.*



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INTRODUCTION.

Many local lists, and at least one State list, represent the work done upon the flora of Indiana in the past. The work has in the main been of excellent character and has served the purpose of furnishing to botanists a fairly complete knowledge of the constituent members of the State flora. The lists have, however, been mere lists, and no attempt has been made to use the data thus obtained in any interpretative way. As a consequence they have been of no value to the general public, nor have they in any way been serviceable to that class of our population, the agriculturists, to whom a knowledge of the plant life of the State is of the greatest significance. This statement is not made in the spirit of criticism, but as furnishing a reason for the preparation of the present list of the native plants of the State, in which an attempt is made to so use the data, as to give to the plants their real significance in the interpreting of soil, moisture and temperature conditions.

It is believed that the message of the plants may be easily read by those destitute of scientific training, if they but use their eyes, and because of this belief, there has been a constant attempt to avoid technical language and to discuss the significance of our common plants in a way readily understood.

Evidently a knowledge of the boundaries and general topography of the area considered, is essential if we would thoroughly understand the plant life of the State. The data for this part of the report are drawn from Dr. Chas. R. Dryer's "Indiana Geography," due credit being given for the extracts made.

Since all our soils, with the exception of humus, are derived from the degradation of rocks, a discussion of the geology of the State in its relation to soils has been necessary, the materials for this part of the paper being drawn from various papers of State Geologist Blatchley. Based upon this, an attempt is made to group plants characteristic of certain types of soil in such a way, that whenever a particular assemblage of plants is seen the soil character may be inferred.

But that the story of the plants may be intelligently read, there must be a fundamental understanding of the chief factors which modify plant life and govern plant distribution. A brief discussion of these factors serves to divide the State into certain areas of fairly

definite limits, each of which possesses its characteristic flora. The character plants of these regions being given and their general appearance and habit being understood, the interpretation of soil conditions in new areas, is a relatively easy matter. It can be taken as an axiom, that the native plants of a region are the best index of its agricultural capacities, a statement which at once indicates the practical value of this knowledge of type plants. This knowledge is not dependent upon ability to use a "key" or remember a scientific name, it depends simply upon keen vision and a quick perception of relations. These lists of type plants are therefore of especial significance, and they have been collated with great care.

Plants have also a direct bearing upon man, some being of high value to him, some impeding his efforts, some being positively injurious. The report therefore discusses these plant relations with considerable fullness. Thus the timbers of the State are considered not merely in relation to their distribution, but also as regards their uses. Some suggestions are also offered concerning the reclaiming of waste areas, the selection of forms suitable for such work and methods of planting. The weeds and poisonous plants are also considered, not only as regards their noxious qualities, but also as to their general appearance and habits of growth, in order that they may be easily recognized.

The general conclusions with the antecedent discussions are best treated in paragraph form, and hence precede the catalogue. Under each specific form listed in the latter, there is given its known distribution within the State, together with other data of interest and value. This catalogue represents the results of twenty years' study of the flora of the State, the collection of the data for its presentation in the present form having been carried on for the past six years. It is presented in the hope that it will serve to show the intimate relations existing between science and the various industries dependent upon cultivation of the soil.

BOUNDARY.

"The State of Indiana is included between $37^{\circ} 41'$ and $41^{\circ} 46'$ north latitude, and between $84^{\circ} 44'$ and $88^{\circ} 6'$ west longitude. It is bounded on the north by the parallel which is ten miles north of the southern extremity of Lake Michigan; on the east by the meridian of the mouth of the Great Miami River; on the south by the Ohio, and on the west by the Wabash River and the meridian of Vincennes. Its extreme length is 250 miles, its average width 145 miles, its area, 36,350 square miles."

ELEVATION.

"The highest land in the State, in southern Randolph County, is 1,285 feet above tide; the lowest, at the southwestern corner, is 313 feet. The area above 1,000 feet comprises 2,850 square miles in three tracts: (1) An irregular area around the headwaters of the White Water River in Union, Wayne, Randolph, Delaware, Henry, Rush, Decatur, Franklin and Ripley counties. (2) A narrow crescentic ridge in Brown County. (3) A considerable area in Steuben, Dekalb, Noble and Lagrange counties. Isolated peaks rise in Brown County to 1,172 feet, and in Steuben to 1,200 feet. The area between 500 and 1,000 feet in elevation is 28,800 square miles, and that below 500 feet is 4,700 square miles. The average elevation of the State is 700 feet."

DRAINAGE.

"The general slope of Indiana is to the southwest as indicated by the course of the Wabash River and its tributaries, which drain two-thirds of the State. Of the remaining third, one-half is drained directly to the Ohio, and one-half to Lakes Erie and Michigan, and to the Mississippi through the Illinois."

PHYSIOGRAPHIC FEATURES.

The greater part of Indiana is a *plain of accumulation*; the surface of a sheet of glacial drift, which varies in thickness from a few feet to 500 or more. The average thickness is more than 100 feet. It consists chiefly of a mass of clay containing more or less gravel and boulders. This is locally varied by heaps, ridges, sheets and pockets of sand and gravel, and in the southern part of the State is overlain by a peculiar fine silt, called *loess*.

The driftless area is a *plain of degradation*, formed by the removal of the original rock surface to an unknown depth, and now represented by the summits of flat and even topped divides, ridges and hills.

On the plain occur numerous *hills of accumulation* forming the great morainic belts, the result of excessive dumping and heaping up of drift along the margins and between the lobes of the melting ice-sheet. The most impressive examples are found in Steuben, Lagrange, Noble and Kosciusko counties, where they attain a height of 200 feet or more, and are as steep and sharp as the materials will lie. The Ohio slope is studded all over with *hills of degradation*, blocks and fragments of the original plain left by the cutting out of the valleys between them. These are very conspicuous in the counties of Greene, Daviess, Martin,

Crawford, Orange, Washington and Jackson, but attain their greatest development in Floyd, Clark and Scott, where the Silver Hills and Guinea Hills rise to 400 and 500 feet above the valley bottoms. In Brown County the knob topography attains the highest absolute elevation in Weed Patch Hill, and the surrounding region is so rugged as to have gained the title of the "Switzerland of Indiana."

In addition to the massive and rugged moraine belts already described, there are many morainic ridges of gentle slope and smooth profile, conspicuous only upon the map by their influence upon streams. Those which extend along the right bank of the St. Mary's, upper Wabash, Salamonie, Mississenewa and upper White rivers are typical examples. In this connection should be mentioned the form of moraine known as *boulder belts*—long, narrow, curving strips of country, thickly covered with large boulders. These occur in many counties in the northern half of the State.

Dunes and Beach ridges are hills and ridges of sand or gravel, either blown up by the wind or built up by the waves of lakes now withdrawn. Such features are found in the region around the head of Lake Michigan, the Kankakee basin, and the Maumee Lake basin, east of Fort Wayne.

All the *valleys* of Indiana are the result of stream erosion; most of them by the streams which now occupy them. During the glacial period, however, the streams generally carried much more water than at present.

Gorges and ravines exist in great number and variety throughout the Ohio slope, occurring along the White Water, White and Ohio rivers, and all their tributaries. The eastern tributaries of the Wabash in Fountain and Parke counties flow through very beautiful canyons, cut in massive sandstone. In valleys of this character rapids and falls are very numerous. They occur upon nearly every stream emptying into the Ohio, and vary in height from a few feet to sixty or eighty.

Between the terraces of sand and gravel, which border the present channels of our streams, and mark the heights at which they were once able to deposit sediment, there are often broad "bottoms" or *flood plains*, which furnish the best corn lands in the world.

The surface of the northern plain is thickly sprinkled with small lakes, which occupy irregular depressions in the surface of the drift and are especially characteristic of the massive moraines. The whole number can not be less than 1,000. The largest, Turkey Lake, in Kosciusko County, has an area of five and a half square miles.

The *marshes and swamps* exceed the lakes in number and extent.

The smaller ones are the basins of former lakes, which have been filled with sediment and vegetation. The largest are in the Kankakee basin, and are the remaining vestiges of a glacial lake. Everywhere over the central plain the divides are too flat and the slopes too gentle for good drainage, and marshes abound. These, however, have been largely drained by ditches.

The above physiographic features are selected from the very complete presentation of the subject by Dr. Dryer in his General Geography of Indiana, as being those bearing most directly upon the distribution of the flora of the State. Those parts presented have at times been abridged, the omitted parts, being as a rule, illustrations of the special feature discussed.

CLIMATE.

Taking the record for 1896, which was very nearly a normal year, the following summarizes the results drawn from observations upon rainfall and temperature.

"The mean temperature for January varied from 25° in the north to 33° in the south, for July from 72° to 77°. The absolute extremes of temperature for the State and year were 103° and —22°.

"The number of days in the year with average temperature below freezing was ninety in the north and twenty in the south. The changes of temperature are frequent, except in summer, when a period of two or three months of uniformly warm, clear weather often occurs.

"The mean rainfall is quite variable from year to year, ranges from thirty-five inches in the north to forty-five inches in the south, and is well distributed throughout the year, with a slight excess in spring. The prevailing winds are from the southwest and the average wind velocity, seven to nine miles per hour."

The following tables taken from an article by Prof. H. A. Huston in Indiana Agricultural Reports, Vol. 40, p. 503, 1898, will perhaps serve to give a clearer idea of the climatal conditions of the State:

AVERAGE TEMPERATURE FOR FOURTEEN YEARS—DEGREES FAHRENHEIT.

AVERAGE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Northern	23.4	26.8	35.1	53.3	60.2	70.7	74.0	70.9	64.8	51.0	38.6	30.9
Central	26.4	30.2	37.9	52.3	61.7	72.0	74.8	71.6	66.1	52.3	40.4	33.1
Southern.....	30.2	33.9	41.4	55.8	63.8	73.6	75.8	74.4	67.8	54.7	43.5	35.8

AVERAGE PRECIPITATION IN INCHES.—FOURTEEN YEARS.

AVERAGE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Northern.....	2.49	2.57	2.52	3.08	4.47	3.81	3.07	2.82	3.11	1.86	3.46	2.52
Central	2.99	3.09	2.93	3.54	3.98	3.92	3.11	3.24	3.21	1.80	4.01	2.78
Southern.....	3.64	4.06	3.95	4.01	3.96	4.20	3.55	3.45	3.20	2.02	4.47	3.08

SOILS.

"The soils of Indiana may be roughly classified into three great groups; viz., drift soil, residual soils and alluvial soils. The drift soils are found in the northern three-fourths of the State, are extremely varied in depth and character and are formed of a mass of heterogeneous material which was brought to its present resting place by a great glacier or slowly moving sheet of ice, which thousands of years ago, covered the area mentioned.

"The residual soils are found in the counties south of the southern limit of the glacier. They were formed, for the most part, in the place where they are now found, by the decay of the underlying limestone or sandstone rocks. The variety of materials entering into their composition is therefore limited, and they are, for that reason, among the poorer soils of the State.

"The alluvial soils are those of the river and creek bottoms throughout the State. Gentle rains and earth-born torrents, little trickling rills and strong streams are ever at work tearing down the soils and underlying clays from every slope, and bearing them away to lower levels. The small water-formed trench of to-day next year becomes a chasm and ages hence a hollow, and the transported material is gradually deposited as alluvial soil over the so-called "bottom lands," which are annually overflowed.

"The drift soils which cover the northern and central portions of Indiana, derived, as they were, from various primary and igneous rocks in the far north—ground fine and thoroughly mixed as they were by the onward moving force of a mighty glacier—are usually rich in all the necessary constituents of plant food. Neither they nor the alluvial soils require a large annual outlay for fertilizers as do the residual soils of southern Indiana, over which the drift of the glacial period did not extend."*

* Blatchley—21st Ann. Rep. Dep. of Geol. and Nat. Resour. of Indiana, 1896, pp. 21-22.

PLANT SOCIETIES.

Plants are living things, and their occurrence and persistence in any given region is not a matter of chance, but is determined by surrounding conditions. There is a constant struggle in nature among plants, not merely to fill unoccupied territory, but also to maintain positions already held. Because of this, plants having similar vital necessities are found associated, forming plant societies or unions, and these plant societies stand as the sign of the capacity of that particular region, in the sustaining of plant life. Plant societies are usually made up of many different kinds of plants, since, if those of the same form or of closely related forms were thus associated, the vital necessities would be absolutely identical, and the struggle for existence would become too intense. An ability to determine the significance of these plant societies, to interpret the factors which make them possible, would serve to save much costly experimentation and to prevent many serious failures. No surer sign can be found of the agricultural capacity of a soil than is furnished by the native plants there growing. But the sign to have significance must be interpreted.

The chief factors controlling plant distribution are *light, heat, water, soil*, both as regards its chemical composition and physical character, and *wind*.

Light, because many of the most important functions of the plant, such as transpiration and carbon fixation, are largely or wholly dependent upon its presence.

Heat, because plants have certain temperature requirements. These requirements differ in a considerable degree in different species, but, as a rule, plants work only at a temperature between 32° to 122° Fahr.

Water, since all soil derived foods must be taken in the form of a watery solution, and its presence in a certain amount is imperative. In this, also, there exists a wide range, as is shown by the fact that some plants live totally submerged in water, while others are able to endure long continued drought.

Soil, for the reason that its chemical composition determines the food materials carried by the water, while its physical character determines both its ability to receive and retain moisture. Sand and clay illustrate reverse conditions in the matter of the reception and retention of water.

Winds, where strong and long continued, because of their drying effect upon the atmosphere and the consequent abstraction of water from the plant by the thirsty air. In our own State this factor is, perhaps, less apparent in its influence than the others, although, in certain

regions near Lake Michigan, it has had a very marked effect in determining the existing flora.

It is the influence of these factors, operating in differing localities in varying intensity and proportion, that determines plant distribution. As conditions change, the plants must either change to meet these new conditions or perish. Various adaptations, in familiar forms, show how plastic is the plant and how quickly it responds to new conditions. The hackberry (*Celtis occidentalis*), which is a tall tree on bottom lands, becomes a thorny shrub on dry sand dunes, and the ordinary wild rose, which in swamps or upon a lake margin, is from six to ten feet high and almost thornless, dwindles to a stunted bush from twelve to eighteen inches high, and is absolutely covered with thorns when it grows upon a dry sand ridge. Marked changes also show themselves in the size and structure of the leaf.

It is probable that water, in the long run, more than any other of the factors just named, influences plant distribution, although it must be remembered that no one factor alone determines a plant society. So important is this water factor that the grouping of plants is generally based upon it, the subordinate groupings showing the relation of the plants to the other factors. Upon this basis three great groups of plants can be recognized in Indiana.

I. Water-loving plants (*Hydrophytes*) adapted for living either wholly submerged in the water or in soil exceedingly rich in water. Evidently such conditions are to be found in the shallower water of lakes, in swamp regions and along the lower stretches of our streams. The plants growing in this extreme condition are characteristic and easily recognized. The "cat-tail," the various "rushes," tall, rank "sedges," "wild flags" and many other familiar forms will be at once recalled as of this type.

II. Dry soil plants (*Xerophytes*), which stand at the opposite extreme of the water condition, successfully maintaining life in localities where both soil and air are extremely dry. It is apparent upon the most cursory thought, that plants under these conditions must differ greatly in general appearance from the water-loving plants. To meet their drought conditions, many adaptations have been developed, both for the prevention of the loss of moisture from the plant and for storing away for future use the scant excess of water that may from time to time be secured. Regions furnishing these conditions are not abundant in Indiana, although in the "dune" regions along the southern shore of Lake Michigan and on occasional sand ridges, left by the glaciers, such desert plants may be found. Bug seed (*Cakile edentula*),

sea-rocket (*Corispermum hyssopifolium*) and prickly pear (*Opuntia humifusa*) suggest themselves as familiar examples of this type of plant. Still more do the stunted forms, the reduced leaves and the surface hairs or epidermal thickenings of most plants in such regions tell the story of the arid soil.

III. Intermediate plants (*Mesophytes*) or those adapted to intermediate conditions of both soil and air moisture. Such plants include the great majority of our forms, since these conditions prevail throughout the entire State. The plants of use to man, as well as the weeds, belong to this group, since plants to be either of high economic value or serious injury to man must be such as are adapted to these medium, or average conditions. Mesophyte conditions are, indeed, agricultural conditions. If a farmer has a swamp tract (*hydrophyte conditions*) which he desires to cultivate, he drains it, that is he strives to bring it to mesophyte conditions. If it is wished to redeem an arid region (*xerophyte condition*) irrigation is employed that the mesophytic condition may be reached. This mesophytic or intermediate flora stands therefore as the index of the agricultural fitness of the land so far, at least, as the water content of the soil is concerned.

Sub-divisions under each of these great groupings, based upon other factors influencing the distribution of plants, can be made, showing how perfectly the indigenous flora of a region stands as the sign of its agricultural capacity. While all plants tell the story, none tell it so plainly as the trees, which represent the ultimate possibility in a vegetative way, of soil and sun and air and centuries of time. It is impossible, with the data at hand, to more than indicate some of the more important of these sub-divisions, such as "clay-soil societies," "limestone soil societies," "sand plants," "cliff plants" and "swamp plant" societies. It must be remembered, however, that no one plant standing alone is characteristic of any given set of conditions, although a group of a half dozen or more species can usually be selected which will, as a rule, not be found associated under any other set of conditions. It is the ability to distinguish these characteristic groupings, which enables us to read the message of the plants.

It will be seen from the above, that it is quite possible to construct a map of the State showing the distribution of these three great groups with a fair degree of precision. Such a map would be a phytogeographic map. In the past four years there is a growing inclination to call the study of plant distribution, *phytogeography*.

The large Hydrophyte areas would be found in the great Kankakee marshes, about the innumerable small lakes of northern Indiana, in

the swamps covering thousands of acres that hang heavily along the banks of the Wabash in its lower stretches and isolated patches at every pond and lakelet or wherever there exists a sluggish, low-banked stream. The continuous areas are those in the Kankakee region in the northwest, and the cypress swamps in the extreme southwestern counties. In these regions water-loving plants dominate vegetation and give their peculiar cast to landscape features.

The dry plant, or Xerophyte, regions are found chiefly in the northern parts of the State. The only continuous area is a relatively narrow fringe along the shores of Lake Michigan, where desert plants and those showing alpine or arctic characters, struggle as best they may for a precarious livelihood along the beaches, or gain a firmer footing upon some captured dune somewhat further back from the shores. Isolated areas are also found, chiefly in the northern portions of the State, where bare sand ridges or "barrens," dating back to glacial times, furnish somewhat similar conditions. In other parts of the State an occasional ancient river beach or bar may give a sharply limited home for plants of this type.

The remainder of the State, constituting by far its larger part, furnishes the intermediate plant or mesophytic area. Wherever these regions meet there is an overlapping of forms. Intermediate plants developing adaptations for increased moisture conditions invade the territory of the water-loving plants, and the hydrophytes retaliate by an invasion of the intermediate area.

Where drainage upon a large scale has been introduced, sharp changes in the water content of the soil and in the soil water level have of course resulted. In such regions equally sharp changes must have occurred in the flora. Existing forms have either taken on adaptations for the new conditions or must have given way to other forms. How great these changes are at times has been shown by W. W. Chipman¹ in his studies of the successive floras inhabiting a definite area. In this case no less than three floras of distinct type followed each other within a period of six or eight years. These changes of the soil water level do not merely affect herbaceous forms of annual or biennial habit. At times they affect forest trees, a fact shown by the death of beech trees, which followed extensive drainage operations in various counties of the State. The root habit of the beech furnishes the reason for its more ready yielding to changed water conditions. Considerable forest areas, however, of mixed forms have shown a decided depreciation in value in regions where drainage operations have been extensive.

¹Proc. Ind. Acad. Sci., 1896, pp. 147-158.

It is in these areas of over-lap and changing conditions that those variations from "the description" are constantly occurring, which are responsible for so many errors of reference in plant lists. The plasticity of the plant and the potency of environmental factors have been too often lost sight of by the systematist.

HYDROPHYTES.

The following plants may be taken as the most prominent forms of this type. The distribution of the species will be found in the general catalogue:

- Typha latifolia* L. Cat-tail.
Potamogeton pulcher Tuckerm. Pondweed.
Potamogeton praelongus Wulf. Pondweed.
Potamogeton zosterifolius Schum. Pondweed.
Potamogeton foliosus Raf. (= *P. pauciflorus* Pursh.).
Potamogeton diversifolius Raf. (= *P. hybridus* Michx.).
Potamogeton Spirillus Tuckerm.
Potamogeton Robbinsii Oakes.
Zannichellia palustris L. Horned Pondweed.
Sagittaria latifolia Willd. (= *S. variabilis* Engl.). Arrowhead.
Philotria Canadensis (Michx.) Britt. (= *Elodea Canadensis* Michx.).
 Waterweed.
Vallisneria spiralis L. Tape-grass. Eel-grass.
Alisma Plantago-aquatica L. (= *A. Plantago* L.). Water Plantain.
Eriocaulon septangulare Withering. Pipewort.
Wolffia Columbiana Karsten.
Spirodela polyrhiza Schleid.
Lemna trisulca L. Duckweed.
Lemna minor L.
Peltandra Virginica (L.) Kunth. Arrow Arum.
Pontederia cordata L. Pickerel-weed.
Heteranthera reniformis Ruiz. and Pav. Mud-plantain.
Heteranthera dubia (Jacq.) McM. (= *H. graminea* Vahl.).
Iris versicolor L. Larger Blue Flag.
Polygonum Hartwrightii Gray. Knotweed. Red-flowered Smartweed.
Polygonum hydropiperoides Michx.
Polygonum amphibium L. Water Smartweed.
Ceratophyllum demersum L. Hornwort.
Cabomba Caroliniana Gray.
Brasenia purpurea (Michx.) Casp. (= *B. peltata* Pursh.). Watershield.
Nymphaea advena Soland (= *Nuphar advena* Ait.). Yellow Pond Lily.
 Splatter Dock.

- Castalia odorata* (Dryand) Woodv. and Wood (= *Nymphaea odorata* Ait.).
Sweet-scented Water Lily.
- Castalia tuberosa* (Paine) Greene (= *Nymphaea reniformis* D. C.). Tuber-bearing Water Lily.
- Nelumbo lutea* (Willd.) Pers. Yellow Nelumbo, or Water-chinquapin.
- Sarracenia purpurea* L. Pitcher-plant. Side-saddle Flower.
- Ranunculus Purshii* Richards (= *R. multifidus* Pursh.). Yellow Water Crow-foot.
- Batrachium trichophyllum* (Chaix.) Bossch. (= *Ranunculus aquatilis trichophyllum* Gray). Common White Water Crow-foot.
- Roripa palustris* (L.) Bess. (= *Nasturtium palustre* D. C.) Marsh Cress.
- Roripa Nasturtium* (L.) Rusby. (= *Nasturtium officinale* R. Br.) True Water Cress.
- Roripa Americana* (Gray) Britton (= *Nasturtium lacustre* Gray). Lake Cress.
- Callitriche heterophylla* Pursh. Water Starwort.
- Isnardia palustris* L. (= *Ludwigia palustris* Ell.) Water Purslane.
- Hippuris vulgaris* L. Mare's Tail.
- Myriophyllum spicatum* L. Water-milfoil.
- Myriophyllum verticillatum* L.
- Myriophyllum heterophyllum* Michx.
- Myriophyllum pinnatum* (Walt.) B. S. P. (= *M. scabratum* Michx.)
- Myriophyllum humile* (Raf.) Morong. (= *M. ambiguum* Nutt.)
- Sium cicutæfolium* Gmelin. Water Parsnip.
- Hottonia inflata* Ell. Featherfoil. Water Violet.
- Utricularia vulgaris* L. Bladderwort.
- Utricularia purpurea* Walt.
- Utricularia gibba* L.
- Dianthera Americana* L. Water-willow.
- Bidens Beckii* Torr. Water Marigold.

To this list there would properly be added the numerous forms of rushes (*Juncaceæ*), sedges (*Cyperaceæ*) and grasses (*Gramineæ*), which are omitted because the species are unfamiliar and in many cases of difficult discrimination. Many forms, which are more strictly marsh plants, might also have been listed at this place. These marsh plants stand for a soil very rich in water and are true hydrophytes.

THE XEROPHYTE FLORA.

The researches of Dr. H. C. Cowles, of Chicago University, upon the Dune Floras of Lake Michigan, have made it possible to present in considerable detail various plant unions of this type. From the mono-

graph of Dr. Cowles¹ and through additional suggestions furnished by him, the materials for this section have been derived. So complete and satisfactory was the study of Dr. Cowles, that previously prepared discussions of this flora have been discarded and his article taken as the basis of the presentation of the subject.

From the ecologic sub-divisions worked out by Dr. Cowles, the following have been selected as fairly representing characteristic conditions in the area considered.

I. THE LOWER BEACH.

"The lower beach has been defined as the zone of land washed by the waves of summer storms. It might also be defined as that portion of the beach which is devoid of vegetation. Perhaps there is no flora in the temperate zone quite so sparse as that of the lower beach, unless we except bare rocks and alkaline deserts. Land life is excluded because of the frequency and violence of storms; the waves tear away the sand in one spot only to deposit it in another. Even though a seed had the temerity to germinate, the young plant would soon be destroyed by the breakers. Water life is excluded because of the extreme Xerophytic conditions, which commonly prevail on the lower beach. Thus the lower beach is a barren zone between two zones of life. Below it there exist algæ and other hydrophytic forms, which flourish in the fury of the breakers; above it there exists the flora of the middle beach, a flora adapted to the most intense xerophytic conditions. At no particular time, perhaps, are the conditions too severe for some type of life; vegetation is excluded because of the alternation of opposite extremes."

II. THE MIDDLE BEACH.

"This is situated between the upper limits of the summer and winter waves, comparatively dry in summer, but washed by high waves in winter. It may also be defined as the zone of *succulent annuals*. The life conditions of this zone are exceedingly severe and result in a flora of the most pronounced xerophytic characters." The winter storms preclude the possibility of survival through that period, thus practically excluding biennials and perennials. "In the summer time the xerophilous conditions are extreme. Nowhere in the dune regions are the winds more severe than here. No flora is more exposed to the extreme desiccating influences of the summer sun than that which grows upon the bare and open beach."

¹Cowles, H. C.—"The Ecological Relations of the Vegetation of the Sand Dunes of Lake Michigan." Bot. Gaz., Vol. 27, Nos. 2, 3, 4 and 5.

III. THE UPPER BEACH.

This is the part of the beach beyond the reach of the waves. "The life conditions are much less severe than on the middle beach, chiefly because of the freedom from the wave action of the winter storms. The exposure to the sun is almost as great as on the lower zones, but there is more protection from the wind because of the abundance of driftwood. The decay of the driftwood may also add no inconsiderable portion to the food material of the beach plants.

"The flora of the upper beach is much richer than that of the middle beach, both in species and individuals, but here as there the vegetation is so sparse that the tone to the landscape is given by the soil."

IV. THE ACTIVE DUNES.

Neglecting some very interesting phases in the life history of dunes, touching upon their embryonic stages and the plants concerned in fixing them and passing also their transformation into wandering dunes, we may consider the conditions in this active dune which is usually a part of what Dr. Cowles denominates the *dune complex*. The factors involved give, of course, to the complex great instability, but it is very evident that in this shifting maze plant life must be very scant. "The reasons for the scanty plant life on the exposed portions of the dune complex are not far to seek. First of all it is *not* due to the scarcity of water in the soil. Even after a long period of drought in summer, the sand is cool and moist at a short distance below the surface. In spite of the water supply in the dune sand, the scanty flora of the complex is characterized by the possession of the most pronounced xerophytic adaptations to be found in this latitude. In the main these adaptations are to guard against excessive transpiration, such as is induced by unusual exposure to wind, heat and cold.

"Directly or indirectly, the wind is the factor primarily responsible for the scant vegetation of the dune complex." While incidentally the wind dries up the soil and increases transpiration, and while its mechanical action in connection with the sand blast is destructive to vegetation, its cardinal destructive influence lies in its power to cover and uncover the dune plants.

V. THE ESTABLISHED DUNES.

In time the slowly advancing slopes of the dune complex may be captured by vegetation and be transformed into an established dune. The story of the capture is wonderfully interesting, when followed in its details. Briefly stated the stages are something like this. First,

social perennial herbs such as *Ammophila* and *Asclepias* obtain a foothold, these are followed by shrubs like *Cornus*, *Salix* and *Prunus*, which gradually drive out the former plants, which are not adapted to the shade. The shrubs are followed or accompanied by tree-forms, especially in our area, by the basswood *Tilia Americana*, with the appearance of the trees, vegetation becomes more and more abundant, and the plant forms become of a more decided mesophytic cast. It is impossible in this connection to do more than to select a few types of established dunes, which may be taken to be fairly representative of our lake shore regions. The three selected are the Basswood, Evergreen and Oak dunes. The obvious condition which favors the rich development of plants is the almost complete protection from the wind.

PLANTS OF THE MIDDLE BEACH.

Cakile edentula (Bigel.) Hook (= *C. Americana* Nutt.) American Sea-rocket. The character plant of the middle beach.

Euphorbia polygonifolia L. Spurge.

Corispermum hyssopifolium L. Bug-seed.

The distribution of these plants is not at all uniform over the middle beach. Their favorite place for growth is along the line of debris which marks the upper limit of this beach. This limit is variable from year to year, depending partly upon the number and violence of the storms, more definitely upon the advance or recession of the lower beach.

PLANTS OF UPPER STRETCHES OF BEACH.

Populus balsamifera candicans (Ait.) Gray. Balm of Gilead. Rare.

Lathyrus maritimus (L.) Bigel. Beach Pea.

Thalesia fasciculata (Nutt.) Britton. (= *Aphyllon fasciculatum* A. Gray.)

Root parasite on the *Artemisias*.

Artemisia caudata Michx. Wormwood.

Artemisia Canadensis Michx.

Both species of *Artemisia* are abundant, being the dominant form at times over extended areas. The most characteristic species.

Carduus Pitcheri (Torr.) Porter. (= *Cnicus Pitcheri* Torr.)

This thistle, while seldom so common as *Artemisia*, is pretty sure to be found on any upper beach.

Certain plants, especially characteristic of embryonic dunes, are found, though rarely in great abundance, upon the upper stretches of the beach. Among these are *Ammophila arenaria*, and *Elymus Canadensis*. *Calamagrostis longifolia*, one of the chief character plants of active dunes, is also sometimes found in this locality. *Cakile edentula* and *Corispermum hys-*

sopifolium also occur, but are less abundant than on the middle beach. The shrub life of the upper beach stretches is sparse, the forms are relatively scattered, while the plant body is stunted and bears visible signs of the severe environment. The shrub of most common occurrence is the sand cherry, *Prunus pumila*. Poplars occasionally occur, the forms being the cottonwood, *Populus deltoides* and *P. balsamifera*, both the type and the variety *candicans*. The willows maintaining themselves in this situation are *Salix fluviatilis*, *S. glaucophylla* and *S. adenophylla*.

PLANTS OF ACTIVE DUNES.

Equisetum hyemale L.

Andropogon scoparius Michx. Beard Grass.

Ammophila arenaria (L.) Link. (= *A. arundinacea* Host.) Sea Sand-reed.

Calamovilfa longifolia (Hook) Hack. (= *Calamagrostis longifolia* Hook). Reed Bent grass.

Elymus Canadensis L. Wild Rye.

Populus deltoides Marsh. (= *P. monilifera* Ait.) Cottonwood. A very common form in this situation.

Salix fluviatilis Nutt. (= *S. longifolia* Muhl.).

Salix glaucophylla Bebb.

Salix adenophylla Hook.

Prunus Virginiana L. Choke-cherry.

Vitis cordifolia Michx. Frost-grape.

Cornus stolonifera Michx. Red-osier. Dogwood.

Cornus Baileyi Coult. and Evans.

Asclepias Syriaca L. (= *A. Cornuti* Decris.). Common Milkweed.

Lithospermum Gmelini (Michx.). A. S. Hitchcock. (= *L. hirtum* Lehm.) Puccoon.

Solidago Virgaurea Gilmani (Gray) Porter. (= *S. humilis Gilmani* Gray.)

Corispermum hyssopifolium L. Bug-seed.

PLANTS OF THE BASSWOOD DUNES.

Hepatica Hepatica (L.) Karst. (= *H. triloba* Chaix.) Liver-leaf. Hepatica.

Sassafras Sassafras (L.) Karst. (= *S. officinale* Nees and Eberm.) Sassafras.

Hamamelis Virginiana L. Witch-hazel.

Rosa acicularis Lind. (= *R. Engelmanni* S. Wats.)

Ptelea trifoliata L. Shrubby Trefoil. Hop-tree.

Rhus aromatica Ait. (= *R. Canadensis* Marsh.) Sweet-scented Sumach.

Rhus radicans L. (= *R. Toxicodendron* of American authors in part.)

Poison Ivy. Poison Oak.

Celastrus scandens L. Wax-work. Climbing Bitter-sweet.

Vitis cordifolia Michx. Frost or Chicken-grape.

Parthenocissus quinquefolia (L.) Planch. (= *Ampelopsis quinquefolia* Michx.) Virginian Creeper.

Tilia Americana L. Basswood. This is the characteristic tree of this type of dune.

Fraxinus Americana L. White or Gray Ash.

Vagnera trifolia (L.) Morong. (= *Smilacina stellata* Desf.) False Solomon's Seal.

Smilax hispida Muhl. Greenbrier. Catbrier.

Ostrya Virginiana (Mill) Willd. Hop-hornbeam. Ironwood.

Celtis occidentalis L. Hackberry. Sugarberry. The form is the low straggling shrub that is given in Gray's Manual, Sixth Edition, as variety *pumila*.

"One of the most remarkable features of the basswood dunes is the luxuriant development of lianas. Scarcely anywhere away from the river bottom forests is there such a development of climbers as in this region. *Celastrus scandens*, *Vitis cordifolia* and *Rhus radicans* occur almost everywhere. *Parthenocissus quinquefolia* and *Smilax hispida* are not uncommon. The great liana development may be correlated, perhaps, with the dense growth of trees."¹

PLANTS OF EVERGREEN DUNES.

Pinus Strobus L. White Pine.

Pinus divaricata (Ait.) Sudw. (= *P. Banksiana* Lam.). Gray or Northern Scrub Pine. The character tree of this type of dune.

Juniperus communis L. Common Juniper.

Juniperus Virginiana L. Red Cedar.

Andropogon scoparius Michx. Beardgrass.

Prunus pumila L. Dwarf Cherry.

Hudsonia tomentosa Nutt.

Lepargyreæ Canadensis (L.) Greene (= *Shepherdia Canadensis* Nutt.).

Epigæa repens L. Ground Laurel. Trailing Arbutus.

Gaultheria procumbens L. Creeping Wintergreen.

Arctostaphylos Uva-Ursi (L.) Spreng. Bearberry. The character shrub of the evergreen dunes.

Lithospermum Gmelini (Michx.) A. S. Hitchcock (= *L. hirtum* Lehm.). Puccoon.

Melampyrum lineare Lam. (= *M. Americanum* Michx.). Cow Wheat.

Solidago nemoralis Ait. Goldenrod.

Solidago Virgaurea Gillmani (Gray) Porter (= *Solidago humilis Gillmani* Gray).

Aster laevis L. Blue Aster.

¹ Cowles, H. C.—*The Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan*.—Bot. Gaz., Vol. 27, No. 5, p. 362.

PLANTS OF OAK DUNES.

- Pteris aquilina* L. Common Brake.
Kaleria cristata (L.) Pers.
Cyperus Schreinitzii Torr.
Carex Pennsylvanica Lam. Sedge.
Carex umbellata Schk.
Carex Muhlenbergii Schk.
Tradescantia Virginiana L. Common Spiderwort.
Salix humilis Marsh. Prairie Willow.
Quercus velutina Lam. (= *Q. coccinea tinctoria* Gray). Yellow-barked or Black Oak.
Quercus coccinea Wang. Scarlet Oak.
Quercus rubra L. Red Oak.
Quercus alba L. White Oak. Somewhat characteristic of these dunes.
Aquilegia Canadensis L. Wild Columbine.
Sassafras Sassafras (L.) Karst. (= *S. officinale* Nees and Eberm.) Common Sassafras.
Arabis lyrata L. Rock-cress.
Hamamelis Virginiana L. Witch-hazel.
Rosa blanda Ait. Wild Rose.
Rosa humilis Marsh.
Amelanchier Canadensis (L.) Medic. Shad-bush. Service-berry.
Lupinus perennis L. Wild Lupine.
Cracca Virginiana L. (= *Tephrosia Virginiana* Pers.). Goat's Rue.
 Hoary Pea.
Euphorbia corollata L. Spurge.
Rhus copallina L. Dwarf Sumach.
Helianthemum Canadense (L.) Michx. Frost Weed. Rock Rose.
Viola pedata L. Bird-foot Violet.
Opuntia humifusa Raf. (= *O. rafinesquii* Engelm.). Prickly Pear.
Oenothera rhombipetala Michx.
Cornus florida L. Common Flowering Dogwood.
Vaccinium Pennsylvanicum Lam. Dwarf Blueberry.
Vaccinium vacillans Kalm. Low Blueberry.
Phlox pilosa L. Wild Phlox.
Monarda punctata L. Horse Mint.
Viburnum acerifolium L. Arrow-wood. Maple-leaved Viburnum.
Ionactis linariifolius (L.) Greene (= *Aster linariifolius* L.).
Helianthus divaricatus L. Wild Sunflower.

In very open places in the oak dunes the following species also occur:

- Festuca octoflora* Walt. (= *F. tenella* Willd.). Fescue Grass.
Polygonum tenue Michx.

Polygonella articulata (L.) Meisn.

Mollugo verticillata L. Indian Chickweed. Carpetweed.

Talinum teretifolium Pursh.

Draba Caroliniana Walt. Whitlow Grass.

Linaria Canadensis (L.) Dumont. Toad Flax.

Adopogon Carolinianum (Walt.) Britton (= *Krigia Virginica* Willd.).

Dwarf Dandelion.

The *Mesophytic flora* evidently consists of all those plants growing in medium or average conditions, and embraces the large majority of the plants of the State. It is extremely difficult to separate this large group in any satisfactory way, since as no extremes of condition exist overlapping is extremely apt to occur. The more thoroughly the distribution of the plants of the State is studied, the less possible does it seem to break up the mesophytic group into smaller groups, standing for definite soil or light conditions. In as uniform an area as Indiana there is no environmental obstacle worthy of mention to the spread of any given species throughout the state.

TIMBER AND TIMBER AREAS.

The uses of forest areas are so manifold and so apparent that little need be said concerning them. Aside from any of the remoter advantages, however, a consideration of forests as a direct source of wealth justifies a careful study of those conditions which best serve for their development, of proper methods for the conservation of existing areas and of species suitable for the reforestation of special regions. Much of the land of the State, now utterly valueless, could be made to yield handsome revenues in the future if properly planted to trees. Existing areas could be made to steadily increase in value, while yielding a constant income if wisely managed. Every year owners of timber lands, either through carelessness or ignorance are wasting valuable property. Concerning the market value of the various crops which his farm produces, the farmer is generally well posted, but concerning the market value of the various trees making up his timber-land, he is usually ignorant. The possible uses to which the various species may be put do not enter into his calculations, nor does he often consider the probable increase in value of special forms, because of the introduction of new industries. The amount of timber that has been allowed to go to utter waste in the past history of the State, would have been sufficient, if it had been preserved until the present and sold at current prices, to have paid for every acre of land in the State. Even yet, in almost every county, valuable timber is being constantly de-

stroyed because of ignorance of the special uses to which special species may be put. It was, of course, necessary to reduce the original timber lands in order to gain agricultural areas. But the demand for crop areas being satisfied, the remaining timber lands should be so treated as to secure their constant reproduction and betterment.

Originally, seven-eighths of the 21,637,760 acres, comprising the area of the State, was covered with a dense growth of timber. Many of the most valuable hardwood forms reached their maximum development, both as regards size and number, within the bounds of the State. No later than 1880 Indiana was sixth in rank among lumber producing States. It is doubtful if there now exists in the State over 2,000,000 acres of timber and from this area much of the most valuable has been removed, so that what remains can but little more than remind us of the wealth of the past. Most of our timber areas are second growth, containing only occasional forms representing the original forests. Very few "virgin forest" areas are now to be found in the State, most of them being confined to the hill regions of the southern counties, where transportation difficulties have led to their remaining untouched until the present.

FORMS HAVING AN ECONOMIC VALUE.

Of the one hundred and thirteen species of trees found within the bounds of the State, seventy-five are of use in manufactures and hence have a market value. Of this latter number, forty-eight are of such general use as to be classed as of the first rank. Over two-thirds of the species of this group of high-grade timber are found throughout the entire State in considerable numbers, if we except the limited areas known as "barrens" and "prairies." Among these are the various forms of oaks, hickories, walnuts, ashes, maples, the tulip poplar and the bald cypress, although the last named, being confined to the swamp regions of the southwestern counties, is of much less general distribution than the others. In some cases the real value of the form is not fully appreciated as in the case of the lins and buckeyes, both of which are usually considered of but little value, unless it be for fuel. The lin, however, has a high value because of its use in the manufacture of woodenware and other products not requiring great strength, while the wood of the buckeye is used almost exclusively in the manufacture of artificial limbs, for which, indeed, it is preferred to any other wood. The black locust and the honey or sweet locust are also forms which locally have not been assigned their true value. In both forms the wood is very heavy, dense and hard, and has few superiors

from an economic standpoint. Most of the remaining forms of the group have, under existing conditions, but little immediate value. The rapid reduction in the numbers of those of the first importance is, however, a sufficient argument for the careful preservation of these apparently worthless forms. It is unnecessary to mention these forms in detail; in a general way, they may be considered as including all the larger species for which, at present, there seems to be no demand. The present impoverished condition of our forests is very largely the result of the neglect of such precaution on the part of preceding generations of landowners.

REFORESTRATION.

The removal of the timber covering has brought about, in many regions of the State, marked physical changes. Changes so great in some cases as to completely change the agricultural capacity of the soil. Denuded hills have their soil carried by the rains to lower levels and their slopes become scarred with constantly increasing gullies and ridges. In other places, the soil water level has been lowered, because of the increased evaporation of water from the soil, brought about by the removal of the forest covering. In such cases, the soil soon becomes valueless for agricultural purposes, and is allowed to run to waste, often becoming a center from which noxious weeds are disseminated. The recovery of such areas is possible through reforestation. The most satisfactory species for such reforestation must be determined; largely, by local conditions, in part, perhaps, by the purpose in view. The recovering of a denuded area with forest vegetation is one problem, to re-cover it with such forms as will have a merchantable value in a reasonable time, is an entirely different matter. There are really two kinds of reforestation desirable in Indiana. The replanting of denuded areas about dwellings and school houses and along roadsides, and that which is a genuine reforestation, the reclaiming of areas which have been made waste land because stripped of the timber. The two problems are evidently different and the procedure must necessarily differ.

In the first case, what is desired is to secure shapely trees, which furnish good shade and are without bad habits, such as root sprouting, frequent dropping of parts or liability to visitation by insect pests. Native trees are by far the most desirable for this purpose, since they are of all forms the most perfectly adapted to our conditions. In entering upon this work two or three things should be borne in mind. One of these is the fact that rapidly growing forms are usually short-lived and are especially apt to become unshapely unless receiving spe-

cial attention; they are also more liable to injury than species maturing more slowly. Another is, that transplanting is preferably to be done in the early spring before the buds open, February, perhaps, being the best month in our region. Of course, trees transplanted at other seasons will live if proper care is taken, but the chances of success are much greater in cases of spring planting. In taking up the tree for transplanting care should be taken to keep the root system as nearly intact as possible, not so much the strong roots, which serve merely as hold-fasts, as the smaller, fibrous roots, which have to do with absorption. It should also not be forgotten that the roots should be kept moist from the time of removal from the earth until they are transplanted. If these precautions are observed and a sufficiently large hole prepared for the tree, transplanting can be done with a reasonable certainty of success.

Among the best of the native trees for street and roadside are the "sugar maple," "red maple," "linden or basswood," and "white or American elm." Each of these responds readily to proper treatment, and, if not crowded, develops a broad crown and dense foliage. All bud early in the spring and retain their leaves until late in the autumn.

For yards and lawns there may be added with success the "tulip poplar," "black cherry," "red oak," "willow oak" or "sweet gum." If judiciously planted there is secured not merely a suitable shade but also a most artistic effect. I am inclined to add to this list some of the "haws," the "dogwood," the "red-bud" and "service berry," because of their beauty in flower and fruit. Suitably distributed they are very effective in lawn decoration.

In special locations, the sycamore, black walnut, black birch, white ash, beech and chestnut are especially desirable. All of the forms suggested above have under repeated tests proved their suitability for the purposes indicated and are among those recommended by the United States Department of Agriculture.

Certain forms, and forms largely used because of their easy transplanting and rapid growth, should never be planted save in places where nothing else will grow. These are the silver maple, the box elder and the Carolina poplar. There is scarcely a bad plant habit which these forms do not exemplify, and while their rapid growth during the first few years makes them seem most promising, in later years the problem becomes that of their extermination. In sand regions, where no other tree will grow, the Carolina poplar is able to maintain itself and serves to bind the loose soil together so that later other plants are able to secure a foothold. In such cases it is doubtless a

desirable form, but in all others it should be rejected despite the specious arguments of the peripatetic tree agent.

Where large areas are to be set to timber the immediate ends sought should be, by the development of a plant covering, to prevent the waste and impoverishment of the soil by the ordinary agents of degradation and to secure the conservation and proper distribution of moisture. The remote object should be the growing of a crop having at maturity a market value sufficient to compensate for the labor and time involved.

To successfully handle such areas a knowledge of the forms previously existing in the particular locality is desirable as a guide in the selection of forms to be used. The forests of Indiana were, however, as a rule mixed forests, that is, made up of many different species, no single form dominating a large area. It would follow from this that in most localities almost any desirable form may be successfully cultivated. Many of our economic tree forms can adapt themselves to a fairly wide range of soil and moisture conditions, and, while they may not in some cases reach their maximum development, most of them will make satisfactory growth under conditions apparently quite different from the normal.

The few forms suggested as suitable for reforestation within our bounds are those which have suggested themselves in a somewhat extended inspection of the second growth timbers of the State, as being of general distribution, of a fair range of adaptability and of a high economic value. Being a matter of personal judgment, the list is, of course, more liable to error than if it stood for a consensus of opinion of a number of trained observers. It is probable, however, that when extended areas are considered the list will stand with slight change.

Although the black walnut is naturally found in its highest development in rich lowlands, it is capable of a satisfactory and fairly rapid growth in many other situations. Whole hillsides, which had been stripped of their virgin timber, may be seen in various parts of the State to be now fairly well sprinkled with second growth walnut. This frequent appearance and the subsequent persistence of the black walnut in the second growth of partially or wholly denuded areas suggest it as a suitable form for reforestation purposes in many parts of the State. Its rapidity of growth, when associated with its high commercial value, adds weight to the suggestion. So promising is the form that experiments are already under way, experiments that may be considered of considerable magnitude even in a problem such as that

under consideration. A large manufacturing firm at South Bend has established near that city a walnut plantation of one hundred thousand trees, and these trees are expected to be of marketable size within thirty years. An inspection of the trees last summer, the plantation having been under way for several years, confirms this opinion. The plantation is on high land, in relatively thin soil which rests directly upon sand and gravel, an apparently unfavorable condition, and yet the trees were of good size and of thrifty appearance.

If the black walnut is used for reforestation, the nuts should be germinated before planting. As soon as the seedling makes its appearance the nuts should be planted, preferably in rows, and just covered with loose earth. Close planting will tend to develop long-trunked forms, while greater spacing will give a low-branching, short-trunked form. As seedlings appear they may be thinned out from time to time as occasion demands, or vacant places may be reset, thus insuring the desired trunk form. The seedling walnuts need shade during their earlier years, as do the seedlings of most trees, and therefore the planted area should be carefully protected against browsing animals of all kinds for at least five years, in order that the protecting undergrowth may become established. Beyond an occasional clearing of the rows in order to prevent crowding out by more rapidly growing forms, and the care needed to secure the proper trunk form, no cultivation is required.

The sugar maple is another form that establishes itself quickly in almost any soil of the State, and, although a somewhat slow grower, seems able to maintain its own when given proper protection against grazing animals. Other maples maintain themselves as well, but the greater value of the sugar maple makes it the more desirable form.

Upon rolling uplands, with a fairly good sand or clay soil, the ordinary white or gray ash finds its most suitable conditions and would doubtless prove itself a satisfactory form for the reforestation of such areas.

The oaks, also, by their record in the second growth timber, have shown themselves adapted to the re-covering of waste lands. The valuable oaks grow as readily as those that are of less value, and care should be taken to select only those of the first class. In the case of the maples, ash, and oaks, the seeds may be planted in the prepared ground without previous germination. All of the forms germinate readily, and the seedlings are quite hardy.

In almost any warm, dry soil the black cherry makes a good growth and has numerous qualities to commend its use. The only objection

to it lies in the fact that it furnishes a desirable home for certain noxious caterpillars.

The tulip poplar, in certain parts of the State, notably in some of the southern counties, is gaining a foothold among the more common second-growth forms. Its extreme susceptibility to injury, especially in the sapling stage, makes it of doubtful promise in extended replantings. Where, however, the area to be replanted is small, and some care could be given from year to year to the young trees, it would in all probability prove thoroughly satisfactory.

While the conservation and proper distribution of the water of the soil might be accomplished by simply fencing in the waste tracts and giving plants of various kinds an opportunity to gain a foothold, it would seem the part of wisdom, if it were possible, by a little labor and thought, to add, at the same time, to the permanent value of the land. That this end can be accomplished is sufficiently proven by the results that have followed the efforts of the National Forestry Commission in various parts of the country. The paragraphs just preceding are merely suggestions as to reforestation possibilities. If the work is undertaken upon any extensive scale, detailed instructions, as well as valuable assistance, can be obtained from the Chief of the Division of Forestry of the Department of Agriculture.

The reclamation of these waste and wasting areas, a reclamation which is possible at a slight expenditure of time and labor, would add greatly to the wealth of the State, even within the lifetime of a single generation. The successful manufacturer seeks to utilize every by-product; such utilization is to-day a condition of success. The land-owners of Indiana can not afford to leave without an effort at their redemption the thousands upon thousands of acres of waste lands which disfigure the State.

POISONOUS PLANTS.

Plants which may be characterized as poisonous are of two general classes, those which poison by contact and those which are poisonous only when taken into the system. Those of the first class may be again divided into those in which the poisoning is due to some plant constituent and those in which the irritation is due to mechanical causes. These latter cases are sometimes scarcely separable from the former, both factors co-operating in producing the inflammation, but, as a rule, they are easily distinguishable. It must be borne in mind that liability to plant poisoning depends largely upon the thickness of the skin, and largely, also, upon personal idiosyncrasy. Plants per-

fectly innocuous to most persons may prove poisonous to the few who are peculiarly susceptible to plant poisons. A familiar illustration is furnished in the case of the foliage leaves of our ordinary tomato, which most persons handle with impunity, but which in many recorded cases have proved a serious skin poison. As a rule, this susceptibility to contact poisoning can only be discovered through experience, but persons poisoning easily upon contact with the more virulent plants of this type should handle with care certain plants that are considered harmless.

PLANTS POISONOUS BY CONTACT.

This list is very properly headed by the well known Poison Ivy or Poison Oak (*Rhus radicans*). Because of its wide distribution and its various habits of growth, it is probably properly chargeable with a large proportion of the cases of plant poisoning. In most regions of the State it is found as a climber, ascending trees, in some places it trails over rocks by means of rootlets, in others it is a low, erect shrub. It may be readily recognized by its three ovate, sharp-pointed leaflets, the terminal or middle one being wedge shaped at the base. The margins of the leaflets are irregularly wavy or variously notched, scarcely any two being alike. The under surface of the leaflets is usually somewhat downy. The poisonous principle in the plant is a heavy oil and not a volatile substance, as is generally supposed. It is found in all portions of the plant, though perhaps in greater amount in the leaves than elsewhere. The oil is soluble in alcohol but not in water. In cases, therefore, where there is fear that the plant has been touched, the hands should be thoroughly washed in strong alcohol as soon as possible. The wide distribution of the poison ivy is, in some measure, due to crows, these birds being especially fond of the fruit. The seeds are ejected uninjured and are thus spread over the large areas which the crow covers in his search for food.

More virulent in its action than the poison ivy is the "*Poison Elder* or *Dogwood*." Its more restricted range, however, being confined to swamps, makes it much less dangerous than the former. Many persons who are immune to poison ivy are poisoned severely upon contact with the poison elder. In habit the plant is a shrub, ranging from eight to twenty feet in height, bearing large, compound leaves, somewhat resembling those of the alder, of from seven to thirteen leaflets. The poisonous principle is probably of the same character as that of the poison ivy, although it has not yet been satisfactorily worked out. Botanically, the plant is known as *Rhus vernix*.

It is wise for persons with sensitive skins, or who are at all susceptible to plant poisoning, to avoid handling any of the sumachs. Cases are known, and are, indeed, not uncommon, where severe poisoning has resulted from handling the crimson fruit masses of the ordinary sumach, which is classed as not poisonous. In the cases of this kind seen, the poisoning seemed to originate in the mucous membrane of the lips and thence to spread rapidly over the face.

The forms just mentioned are by far the worst of our plants of this type. The following plants are harmless to many people, but are recognized skin irritants, and should be avoided by those liable to plant poisoning.

All of the spurges (*Euphorbias*) are extremely acrid, so much so, indeed, that they are classed among poisonous plants by many authorities. Loudon says, "Every one is so acrid as to corrode and ulcerate the body wherever applied." The most dangerous form locally is *Euphorbia corollata*, easily recognized by its erect habit and the white petal-like appendages of the involucre. It is largely gathered for decoration and is probably responsible for some cases of poisoning otherwise referred.

Indian Tobacco (*Lobelia inflata*) when applied to the skin produces in many cases a serious and persistent irritation.

The Yellow Lady's Slipper (*Cypripedium hirsutum*) at certain stages, especially about the flowering season, is very irritating to the skin, in some cases producing as serious results as "ivy poisoning." Probably many cases of poisoning attributed to *Rhus* are properly chargeable to the free handling of this favorite flower.

Poke-berry (*Phytolacca decandra*) is an irritant which affects chiefly the mucous membranes. The green plant and the root are the parts to be avoided. The mature stem and leaves seem to lose their irritating properties, but the root retains them throughout the life of the plant.

The Smartweeds (*Polygonum*) cause burning and itching of the skin, which in some cases persists for a considerable time. The most active forms in Indiana seem to be *P. hydropiper* and *P. punctatum* Ell. (= *P. acre* H. B. K.)

The Indian Turnips (*Arisæma triphyllum* and *A. Dracontium*) are violently acrid and almost caustic in every part. The mere handling of these plants frequently produces intolerable itching and inflammation of the skin.

The Skunk Cabbage (*Spathyema fætida*) is harmless as to its leaves, but the root is acrid and its handling is almost sure to produce itching

and severe inflammation. It is possible that in many cases where the poisoning is first indicated by itching the inflammation following may merely be the result of scratching.

The May-weed or Dog Fennel (*Anthemis Cotula*) has a juice sufficiently acrid to poison a sensitive skin. Its unpleasant odor, however, is sufficient to prevent its general handling, and only occasional cases of poisoning by this plant have been reported in the State.

Golden-Rods (*Solidago*).—All of the many species of this large and attractive genus are to be regarded with suspicion by those with sensitive skins. The Sweet Golden-rod (*Solidago odora*) has a volatile oil that acts as a decided irritant, and some light cases of poisoning seem directly traceable to other forms of the genus.

The Fleabane (*Leptilon Canadense*) also contains a volatile oil possessing irritating qualities, and often causes severe inflammation, especially if handled when green.

The fresh bark of the Leatherwood (*Dirca palustris*) applied to the skin causes blisters and sores, which are very difficult to heal. If taken internally, severe vomiting is produced.

The common Virgin's Bower (*Clematis Virginiana*) is an acrid irritant, often producing blisters. Indeed, all species of the genus *Clematis* should be carefully handled, since their acrid juice is almost certain to produce irritation if it comes in contact with mucous membranes.

Of the Buttercups (*Ranunculus*) at least three, the "tall buttercup" (*R. acris*), the "bulbous buttercup" (*R. bulbosus*) and the "cursed buttercup" (*R. sceleratus*) are to be avoided. Their juices cause inflammation and ulceration, often very persistent and difficult of cure. The entire plant, in each case, appears to be poisonous, although the root is especially rich in the toxic substance.

The members of the mustard family (*Cruciferae*) are all well known irritants, and, as might be expected, frequently produce smarting and blistering of sensitive skins.

Various forms of the potato family (*Solanaceae*) are to be regarded with suspicion. The "Jimson" weeds or Thorn Apples (*Datura Stramonium* and *D. Tatula*) have a bad reputation, and are charged with especially affecting the mucous membranes. The purple leaved nightshade is claimed by some to be an even more virulent skin poison than poison ivy. The symptoms are said to be similar to those occurring in poisoning from the ivy, but the poison is much more difficult to completely eradicate from the system. Several experiments have failed

to verify these claims, although some cases of severe poisoning are undoubtedly attributable to this plant.

In all of the plants cited above, the poisonous property is some substance within the plant body. Of the entire number, only two, the poison ivy and poison elder, are to be regarded as generally poisonous. The others act as poisons only exceptionally, affecting persons with delicate, sensitive skins, or those who, for some reason not understood, are peculiarly susceptible to plant poisons.

As anything may be regarded as a poison which produces an irritation or inflammation of the skin, it is proper to include some plants which, through mechanical contrivances, produce much the same effects as do those possessing a poisonous principle.

The cockle bur (*Xanthium strumarium*) acts as a skin irritant on account of the dust and hairs with which it is covered.

The Burdock (*Arctium Lappa*) is irritating apparently almost entirely because of its defensive armor. The leaves irritate because of their roughness and the burs on account of the sharp, fragile spinous processes. These latter work their way into the skin, producing great irritation and often festering sores.

In this class, also, are to be put the thistles (*Carduus*), although the irritation produced by them is usually much more transient than that caused by the burdock.

The common Nettle (*Urtica gracilis*) and the Wood-nettle (*Urticastrum divaricatum*) possess stinging hairs and also an acid principle, the two combining to produce the intolerable burning which follows the lightest handling of either of these plants. The best treatment is a persistent bathing of the affected parts in cold water, this soon relieving the burning and reducing the inflammation.

The common Mullein (*Verbascum Thapsus*) produces irritation by the action of its woolly hairs. So vigorous is this action that its leaves are often applied externally to the throat as a counter-irritant.

Plants of this type, however, are readily recognized as skin irritants, and are therefore much less likely to work harm than those of the first class.

PLANTS POISONOUS WHEN TAKEN INTO THE SYSTEM.

In this class of poisonous plants the first rank is easily taken by the Spotted Cowbane or Water Hemlock (*Cicuta maculata*). It is found throughout the State in swamps or low grounds, and is so virulent in its effect that it should be recognized at sight. It is only by this general recognition of the plant and a knowledge of its poisonous

properties that its extermination can be secured. The water hemlock is a smooth, stout plant, ranging in height from two to six feet; the stem is usually streaked with purple; the leaves are as a rule doubly compound, the lower leaflets having long petioles; the leaf segments are from one to five inches long, rather narrow and sharp-pointed, with coarsely toothed margins; the fleshy, tuberous root is succulent and pleasantly aromatic, both features attracting browsing animals. In some cases children and adults, tempted by the pleasant odor, have eaten the root, serious results following in all cases. Where the amount eaten was large or the remedial treatment tardily given, death has resulted. "The plant owes its poisonous properties to a volatile liquid alkaloid, coniine, united with a crystalline alkaloid, conhydrine."¹

In man the symptoms are those of general muscular weakness deepening into paralysis. In some cases stupor, coma and slight convulsions have been noted. In the case (cited by Blyth) of a patient who had eaten hemlock in mistake for parsley, a weakness of the lower extremities, causing staggering in walking, followed in twenty minutes; within two hours there was complete paralysis, and death ensued in three and a quarter hours. The whole plant is poisonous and its specific alkaloid destructive to all forms of life.

It is by far the safest way to avoid all forms of the Umbellifer family, to which the water hemlock belongs, which are found growing wild, and this despite a resemblance in appearance and odor to harmless or even edible cultivated forms. While no other species is so virulent, there is scarcely one which does not possess poisonous properties. In some cases the poison is distributed throughout the plant body, in others, localized in special parts. Fortunately the characters of the family are such as to lead to its ready recognition in almost any stage of growth. The members of the family native in Indiana are all herbaceous plants, varying in height from a few inches to ten feet or more. The leaves, which are usually compound, are much divided and dissected. The leaf-stalks (*petioles*) are expanded or sheathing at the base. The stem is usually hollow. The flowers, which are small and inconspicuous, are either white or yellow in color, and are arranged in umbel-like clusters. A study of the common carrot or parsnip will serve to emphasize these characters. The arrangement of the flowers, taken in connection with the hollow stem and compound leaves with expanded or sheathing petioles, furnishes sufficiently accurate means for recognizing the family. While it is true that some species are

¹ Blyth, A. W.—*Poisons; Their Effects and Detection*, p. 250.

harmless, nevertheless such a large proportion of them contain an acrid, narcotic poison that it is wise to avoid eating any portion of wild plants which possess the characters given above.

Another family, many members of which contain poisonous elements, is the potato family. The poisonous element in this family is usually a narcotic alkaloid. The poison may be distributed throughout the plant, or, as more commonly the case in the plants of this family in our area, be fairly well limited to leaf and seed. Familiar examples are the nightshade, Jimson-weed and horse-nettle. The plants of this family may be recognized by their coarse habit, the rank odor exhaled by their foliage when crushed, and by the flower, which, in most of the wild species, closely resembles that of the common potato.

Many other plants which are poisonous, if taken internally, possess an acrid or bitter juice which prevents their being eaten in excess. The great majority of cases of poisoning of this type reported as having occurred in the State have been caused by the mingling of the hurtful forms with those usually collected for "greens." This gathering is usually delegated to children, and it is little wonder that serious results at times occur, when we recall the fact that a plant may differ greatly in general appearance in its immature and mature stages. In view of the ease with which greens may be raised in the vegetable garden, this seeking after the less palatable wild forms is without the shadow of an excuse.

Very few of our wild fruits are seriously poisonous. In almost every case the unpalatability of the form prevents the eating of a sufficient quantity to produce fatal or even serious results. While there may be a temptation to taste an attractive looking wild fruit, the taste is usually sufficient to preclude any danger of over-indulgence. The danger of poisoning from wild fruits is very greatly exaggerated in the popular mind.

The prevailing idea that poisonous plants have something repulsive in their appearance which serves to put even the unwary on their guard against them is not borne out by facts. Many of our poisonous plants of both types are among our most beautiful native forms. The best protection against dangers from plants of this character is to be found in a knowledge of the life forms which surround us, a practical sort of knowledge which has been very strangely omitted from the courses of study in many schools. As intelligence increases the amount of danger to human beings from plant poisoning becomes less and less. Indeed, it is now reduced to such an extent as to scarcely deserve comment. In the case of stock, however, conditions are dif-

ferent, and there are plants which should be known to every owner of stock, in order that he may guard against them.

Not all poisonous plants are injurious when taken internally by stock, as is illustrated by the various species of poisonous sumachs, the foliage of which is eaten by many kinds of stock with impunity and even with considerable relish. Other plants known to be internal poisons are not here considered because they are never, so far as reports go, eaten by stock of any kind.

Serious effects are often produced in a mechanical way by various plants, as in the case of certain grasses with sharp, barbed awns, in which the awns may work their way into the mouth and throat and cause such intense suffering that the animal must be killed. Other plants operate by clogging up the intestines, by inflaming the tissues of the eyes, the nose or the mouth and intestinal tract, and perhaps by evolving gases which distend the stomach to such an extent that it is impossible for the heart and lungs to perform their functions. As these plants, however, act merely mechanically, containing no poisonous element, they are not here included.

A few plants not actually poisonous to stock are included, because when eaten they taint the milk or impart a disagreeable quality to the flesh of the animal. Wild garlic or onion is a familiar example of a plant which taints milk. Stock eat this obnoxious or deleterious vegetation largely because of unfamiliarity with the forms. The odor and taste of plants ordinarily eaten by animals are so varied that it is little wonder that an animal when placed among plants with which it is unfamiliar will make an occasional mistake. Another cause of poisoning is the use of impure or unclean hay. Grass and meadow hay are very likely to contain poisonous plants. While usually rejected by the animal, they may, either because of hunger or similarity in structure, be eaten. As this cause may be removed by intelligence and care, it is only necessary to call attention to it in this connection.

The problem of establishing the connection between a specific plant and an equally specific instance of stock poisoning is not always a simple one. Very many observations are necessary and the co-operation of the farmer, the veterinarian, the chemist and the botanist will be found needful in most cases. I would be very glad to receive specimens of plants supposed to be poisonous, together with facts touching the conditions under which the poisoning occurred, the symptoms shown and the kind of stock most likely to be affected. The subject is of such importance that it should be carefully worked in every detail. While the stock losses in Indiana from plant poison-

ing are not so great as in the relatively wild regions of the West, still there is an annual loss from this cause amounting to some thousands of dollars. Farmers should know the following plants and see that they are exterminated in lands used for pasture. The lists have been compiled from the Preliminary Catalogue of Plants Poisonous to Stock, by V. K. Chestnut, of the United States Department of Agriculture. All of the forms included occur in greater or less abundance in the State. The character of soil in which they grow is indicated in the catalogue proper.

I. PLANTS KNOWN TO BE POISONOUS TO STOCK.

American white hellebore. (*Veratrum viride* Ait.)

Slender nettle. (*Urtica gracilis* Ait.)

Pokeweed. (*Phytolacca decandra* L.)

Corn cockle. (*Agrostemma Githago* L.)

Common larkspur. (*Delphinium tricornne* Michx.)

Field larkspur. (*Delphinium consolida* L.)

Cursed crowfoot. (*Ranunculus sceleratus* L.)

Celandine. (*Chelidonium majus* L.)

Wild cherry. (*Prunus serotina* Ehrh.)

Rattle box. (*Crotalaria sagittalis* L.)

Locust tree. (*Robinia Pseudacacia* L.)

Climbing bittersweet. (*Celastrus scandens* L.)

Water hemlock. (*Cicuta maculata* L.)

Poison hemlock. (*Conium maculatum* L.)

Milk weed. (*Asclepias Syriaca* L.)

Jimson weed. (*Datura Stramonium* L.)

Jimson weed. (*Datura Tatula* L.)

Black nightshade. (*Solanum nigrum* L.)

Sneezeweed. (*Helenium autumnale* L.)

II. PLANTS PROBABLY POISONOUS TO STOCK.

Bracken fern. (*Pteris aquilina* L.)

Yew. (*Taxus minor* (Michx.) Britton.)

Lily of the valley. (*Convallaria majalis* L.)

White baneberry. (*Actaea alba* (L.) Mill.)

Red baneberry. (*Actaea rubra* (Ait.) Willd.)

Wind flower. (*Anemone quinquefolia* L.)

Bulbous crowfoot. (*Ranunculus bulbosus* L.)

Tall crowfoot. (*Ranunculus acris* L.)

Large flowered yellow flax. (*Linum rigidum* Pursh.)

Spurge. (*Euphorbia* various species.)

- Buckeye. (*Aesculus glabra* Willd.)
- Spotted St. John's-wort. (*Hypericum maculatum* Walt.)
- Cowbane. (*Oxypolis rigidis* (L.) Britton.)
- Water parsnip. (*Sium cicutaefolium* Gmel.)
- Pimpernel. (*Anagallis arvensis* L.)
- Potato. (*Solanum tuberosum* L.)
- Spring cocklebur. (*Xanthium spinosum* L.)
- Broad cocklebur. (*Xanthium strumarium* L.)

III. PLANTS SUSPECTED OF BEING POISONOUS TO STOCK.

- Field horsetail. (*Equisetum arvense* L.)
- Crow poison. (*Nothoscordum bivalve* (L.) Britton.)
- Oak. (*Quercus* various species.)
- Sleepy catchfly. (*Silene antirrhina* L.)
- May apple. (*Podophyllum peltatum* L.)
- Trailing arbutus. (*Epigaea repens* L.)
- Spreading dogbane. (*Apocynum androsaemifolium* L.)
- Indian hemp. (*Apocynum cannabinum* L.)
- Butterfly weed. Pleurisy weed. (*Asclepias tuberosa* L.)
- Bittersweet. (*Solanum dulcamara* L.)
- Slender gerardia. (*Gerardia tenuifolia* Vahl.)
- Hedge hyssop. (*Gratiola officinalis* L.)
- Common lousewort. (*Pedicularis Canadensis* L.)
- Indian tobacco. (*Lobelia inflata* L.)
- Brook lobelia. (*Lobelia Kalmii* L.)
- Pale-spiked lobelia. (*Lobelia spicata* Lam.)
- Great lobelia. (*Lobelia syphilitica* L.)
- Golden rod. (*Solidago* various species.)
- American cocklebur. (*Xanthium Canadense* Mill.)

Concerning the poisonous properties of the plants in the first list there is no question; concerning those in lists two and three there is a need of further observation, which can only be furnished by stock-owners. Self interest would seem to be a sufficient motive to inaugurate a careful study of these suspected plants.

WEEDS.

From the standpoint of economics, perhaps the most interesting botanical question is that which touches the control of weeds. It is a problem, the terms of which are constantly changing as conditions change, and one which will probably never be satisfactorily settled. It can, however, be made a much less serious matter by the exercise

of constant care and intelligent foresight. There is a very grave question as to whether any so-called "weed laws" will be of much avail so long as there is so little definite knowledge of plants and of the laws governing plant growth.

A weed may be defined as a plant which contests with man for the possession of the soil. It is more than a "plant out of place;" it is a plant fighting for a place. The great majority of our native plants do not rise to the plane of weeds in the usual acceptance of that term. The list of those which make a constant and vigorous fight against man's supremacy is comparatively short in any given area, and the forms may be easily recognized, their number rarely exceeding twenty or thirty. The habits of life, the methods of seed dissemination, the conditions of germination of these forms should be known by every agriculturist if he hopes for the best results from his labors.

That a plant may make this semi-successful fight, it must possess certain qualities which give it advantage in the struggle for existence, whether the struggle be against existing plants, browsing animals or man himself. Weeds must be able to adapt themselves to a wide range of merely physical conditions, such as soil character; both as to its chemical composition and physical constitution, to sharp differences in the water content of the soil, and to variations in temperature and light exposure. Very few plants, relatively, have such range, but those that have are weeds, unless by chance man has taken them for his own use as crop or forage plants. A plant to be a crop plant must originally have been capable of adapting itself to this wide range of conditions. It is true that in such plants man has, through cultivation, wrought changes, that as a rule, they now require care for their proper development, but this was simply a matter of exchanging one quality for another. Originally, then, weeds and crop plants were very much alike in this matter of plasticity, and it is little wonder that they come in conflict for the possession of the soil. Any plant, then, having this power of adaptation possesses one of the essential qualities of a weed.

The strange plant which the farmer recognizes as growing in rich or poor soil, in dry or moist places, in the shade or in the open sunlight, holding its own in all of these situations, has in it the potentialities of a weed, and that which may be the curiosity of to-day may be the pest of to-morrow. A few years ago a plant was sent me which I recognized at once as the Russian thistle. The letter informed me that a single plant had been found growing in a field near the railroad. Suggestion was made that the plant be destroyed before it set seed, but the advice was not followed. The next year two wagon loads of

Russian thistle were taken from the field. The farmer should be constantly upon the alert for the first appearance of these strange plants and should promptly destroy any suspicious form. It is at the time of the first appearance of a weed that the work of control should begin.

A weed, also, if it rises to the rank of a "bad weed," must be able to maintain itself against enemies in the form of browsing animals. This defense may be secured in manifold ways. It may be through defensive armor, as in the thistle, through a thick covering of hairs, as in the mullein, through a toughness of fiber, as in most composites, through an acrid juice, as in the smartweeds and spurge, or through irritating mineral crystals, as in the Indian turnip. If, in addition to the power of adaptation mentioned above, the plant by any means is able to repel browsing animals, it has gained an immense advantage in the struggle for existence, and is on the high road to weed eminence.

Plants, also, have other means of propagation than that furnished by seeds. Many of our worst weeds are such because they multiply not merely by means of seed, but also by means of root stocks or runners. In cases of this kind, mere destruction of the seed will not serve to exterminate or even limit appreciably the spread of the pest. Before any rational method of extermination can be employed, it is evidently necessary to understand the means by which the particular species is propagated.

In many weeds, the annoying abundance is due to the means of distribution of the seed and fruit. Beggarlice, burdock, Spanish needles and sticktights cling to the coats of stock and are thus distributed; the milkweed, the thistle and a host of other composites are distributed by the wind, while other forms are distributed by birds and grain-eating animals.

A weed is a weed, therefore, because it has a wide range of adaptation in respect to physical factors, possesses efficient defensive devices, propagates readily, often by several methods, and has, as a rule, especially effective means of seed dispersion. Any plant possessing these properties is liable to become troublesome.

In a general way it may be said that the chief characteristic of weeds is a rapid and vigorous stem growth. In case the stems are erect this rapid growth brings the plant into the proper light relation and serves at the same time to shade other plants and retard their growth. Where the stems are not strong enough to maintain themselves in an erect position, they may form a mat or carpet over the ground, thus smothering plants of a slower and less vigorous stem growth.

As the proper time to combat a weed is upon its first appearance, the landowner should know the plants of his farm well enough to rec-

ognize the appearance of a new form among them. Such new forms come in largely along railway lines, and it is along the right of way of our great trunk lines that most new species find their way into our flora. Strange forms also often appear along waterways, following generally the course of the current, but sometimes working against it. Less frequently new forms are found entering the State along wagon roads. These, the chief avenues by which weeds are introduced into the State, should be carefully watched if we expect to minimize the weed problem.

The treatment of the different species of weed plants varies of course with their habits. It would be impossible in this connection to discuss each in detail, but a few general principles may be given, which will be found applicable in a large majority of cases. Many weeds, especially biennials or perennials, are exterminated most easily and with the least expense by planting some early, rapidly growing crop which will smother them out. A field with a good set of clover or blue grass shows how effective this method is. In many cases weed-ridden areas can be thoroughly reclaimed by this method with the minimum of trouble and expense.

Planting corn or root crops is a good method of dealing with weeds, since the cultivation given the crops greatly reduces the spread of the weeds. It can not be too clearly understood that the more thorough the cultivation the fewer in number are the weeds. Professor Bailey once said, "Weeds represent, in an inverse way, the energy and intelligence of the farmer. The greater the latter, the fewer the former; the less the latter, the greater in number the former."

Cutting and burning when in an advanced stage of growth prevents production of seed, and to that extent prevents spreading. This method, however, can be applied only in exceptional cases where it is desired to reclaim waste areas or after the crops have been gathered, as a protection against the weeds of the late summer and autumn.

In most cases where the plant is an annual, and the majority of our introduced weeds are annuals, cutting the plant before it sets seed will in a few years bring about its practical extermination. The seeds of but few of our weeds retain their vitality for a longer period than three years, many of them not so long.

Where the plant is a perennial, cutting the growing plant two or three times a year is, perhaps, the most efficient means of getting the plant under control. By this method the excess food material elaborated by the leaves and transferred to the roots for storage is exhausted in sending out new shoots after each cutting, and none is left to carry the plant through the winter and to furnish food supply for

the growth of the shoots of the following spring. At first the labor involved in this method may be very great, but in a short time the weeds will be found to be so reduced in numbers as to be of easy control. Each type of weed requires its particular treatment, and this can only be given when the farmer knows, and knows thoroughly, some of the fundamental laws governing plant growth and reproduction.

The best efforts in cultivated areas will be of little avail if roadsides and waste places are allowed to remain untouched. The manifold methods of seed dispersion will be sufficient to insure the renewal of the weed crop from these sources. A thriftless farmer may add immensely to the labor of his neighbors who are using intelligent efforts to rid themselves of weeds. Co-operation is the secret of success in weed extermination, and in every movement to check the spread of weeds as wide a co-operation as possible should be secured. A little investigation of the monetary loss caused by the unchecked spread of weeds ought to be enough to secure broadly concerted action on the part of landowners in this beneficent work.

Of the making of weed lists there is no end, and such weed lists have a certain local value. No such list, however, can be of very general application because the factors determining plant growth vary so greatly in different localities. The weeds in Indiana which may perhaps be considered the most annoying to the farmer will be found included in the following lists. The relative rank as to badness will vary in different localities, but all named are bad and should be persistently destroyed. In all probability these species will never be completely driven from our area, but their numbers may be so reduced by concerted, intelligent action that they will no longer demand so large a measure of labor for holding in check nor involve such serious financial loss from year to year. In "Gleanings From Nature" (p. 251), Prof. W. S. Blatchley gives the following list named, in his view, "in the order of their injuriousness."

- Ragweed. *Ambrosia artemisiifolia* L.
- Foxtail. *Setochloa glauca* (L.) Nash.
- Ironweed. *Vernonia fasciculata* Michx.
- Great ragweed. *Ambrosia trifida* L.
- Pigweed. *Amaranthus retroflexus* L.
- Horseweed. *Leptilon Canadense* (L.) Britton.
- Cocklebur. *Xanthium Canadense* Mill.
- Whitetop. *Erigeron annuus* L.
- Lamb's quarters. *Chenopodium album* L.
- Common thistle. *Carduus lanceolatus* L.
- Field sorrel. *Rumex Acetosella* L.

Purslane. *Portulaca oleracea* L.
Burggrass. *Cenchrus tribuloides* L.
Beggar's ticks. *Bidens frondosa* L.
Prickly lettuce. *Lactuca scariola* L.
Crabgrass. *Syntherisma sanguinalis* (L.) Nash.
Jimsonweed. *Datura Stramonium* L.
Smartweed. *Polygonum Persicaria* L.
Bracted bindweed. *Convolvulus Sepium* L.
Corn cockle. *Agrostemma Githago* L.

The above list is well considered, and contains, perhaps, the worst weeds infesting our area. Their relative rank will, of course, vary with the character of the soil, amount of soil moisture and intensity of cultivation. The first of the weeds in the list, *Ambrosia artemisiæfolia*, is regarded by many farmers as not only not injurious, but as positively beneficial to the land. This belief is especially prevalent in the northern part of the State. As yet, I have been unable to discover the reasons for this belief, and am of the opinion that it has no basis in fact. In many parts of the State the velvet leaf or butter-print, *Abutilon Abutilon* (L.) Rusby, is regarded as the worst of our weeds. It multiplies with extreme rapidity, the quick germination of the seeds and rapid growth of the seedling giving it a great advantage over the plants with which it is usually associated. It is extremely difficult to eradicate and has some real claims to a high rank among weeds. The prickly lettuce, *Lactuca scariola* is not regarded as especially troublesome even where found in abundance, since it yields readily to cultivation and is readily eaten by stock, especially in the early part of the season. Where it has taken possession of a field it can be practically exterminated by converting the field into pasture.

Chicory, *Cichorium Intybus* L., while not widely distributed throughout the State, is locally abundant and very difficult to eradicate when it has once found a foothold. It is especially abundant in the southern counties of the State.

The common burdock, *Arctium Lappa*, is by very many reporters considered entitled to the first rank. It is eradicated with extreme difficulty and its seeds germinate readily in a wide range of conditions touching soil, moisture and temperature. The best treatment is a frequent cutting during the growing season as indicated earlier in this section.

A series of weeds of the lawn also should have place in this connection not so much because of the actual loss they cause as because of the labor needed to protect lawns from their invasion. Among the most persistent are dandelion, common mallow, shepherd's purse, the

plantains, especially *Plantago major*, the creeping spurge, *Euphorbia humistrata*, and in wet soils, "rich weed."

Most of these are low growing forms and can not be cut with the lawn mower. The only remedy seems to be the digging up of the individual plants as they appear from year to year, until the lawn is freed from their presence.

Some roadside weeds, such as the dog fennel, the fetid marigold and some of the coarser verbenas, deserve attention from those in control of highways.

It will be seen that to the list given by Mr. Blatchley, I add:

Velvet leaf, *Abutilon Abutilon* (L.) Rusby.
 Chicory, *Cichorium Intybus* L.
 Burdock, *Arctium Lappa* L.
 Dandelion, *Taraxacum Taraxacum*.
 Mallow, *Malva rotundifolia*.
 Shepherd's purse, *Bursa Bursa-pastoris*.
 Plantain, *Plantago major*.
 Plantain, *Plantago Rugelii*.
 Creeping spurge, *Euphorbia humistrata* Engl.
 Rich weed, *Adicea pumila* (L.) Raf.
 Dog fennel, *Anthemis Cotula* L.
 Fetid marigold, *Dysodia papposa* (Vent) Hitch.
 Verbenas, *Verbena* various species.

In certain localities some of these may be replaced by other forms, but taking the State as a whole, it is believed that the above list includes all of the universally bad weeds of our area. When the weed problem is reduced to such simple terms there seems no excuse for not having the annoying forms in fair control in all cultivated areas. The forms will probably never be entirely exterminated, for their wide range of adaptation will enable them to secure a foothold wherever the vigilance of the farmer is ever so slightly relaxed.

NOMENCLATURE.

Without expressing any opinion upon disputed synonymy, it has been thought best in this catalogue to follow the nomenclature of Britton and Brown's *Illustrated Flora of the Northern United States, Canada and the British Possessions*. Where this varies from the Sixth Edition of Gray's Manual, the name used in the latter work is placed in parenthesis. The most marked changes, perhaps, are found in the breaking up of the great families of the *Compositæ*, the *Leguminosæ*, the *Rosaceæ*, the *Ericaceæ*, the *Geraniaceæ*, the *Sapindaceæ* and the

Liliaceae into a series of smaller families of more clearly defined limitations. Some changes in prominent genera also occur, but in the main it will be found that the present arrangement commends itself to the thoughtful student.

The sequence of families is that of Britton and Brown, which in the main, follows Engler and Prantl in their great work *Natürliche Pflanzenfamilien*.

In transferring to this nomenclature it is scarcely reasonable to expect that all errors have been avoided. Great care has been given, however, to this part of the work and it is believed that such errors will only be found exceptionally.

The catalogue, therefore, stands in the latest authorized form both as to arrangement and nomenclature, and will, it is believed, prove of great service to the botanical students of the State.

ACKNOWLEDGMENTS.

In the preparation of this report all published local flora and many manuscript reports have been freely consulted. All data have not been included because of lack of time to study the synonymy of the included species. The lists coming to my hand were named according to the nomenclature of Wood's Botany, Gray's Manual, fifth edition, Gray's Manual, sixth edition, and the "Blue Book" of the Botanical Club of America. As the present catalogue follows the nomenclature of Britton and Brown's recent manual of the botany of the north-eastern portions of North America, the amount of work involved in the examination of these reports becomes apparent. This will explain the absence of some data which have come to my hand; for the most part, these data bear upon regions covered by other and fuller reports. To all these persons who have furnished me local reports I am under many obligations. In most cases the body of the report gives credit to the proper person, although in some cases where data have come from one person and herbarium specimens from another, credit has been given for the latter.

For many facts in connection with the part bearing upon poisonous plants, I am indebted to the Report upon Poisonous Plants, published by Mr. V. K. Chestnut, of the United States Department of Agriculture, and can only regret that time and space did not permit a fuller use of this valuable publication.

From the varied publications of Prof. W. S. Blatchley, much material has been drawn either supplementing data already in hand or in the form of ecologic facts reported from no other source. Mr.

Blatchley has also added very many forms to the flora of the State as the result of his energetic field work and critical studies.

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To the many others who have responded to my communications for special information, I make this general acknowledgment, their special services being credited in the body of the report.

In conclusion, I wish to express my appreciation of the aid given by the botanists of the country, who have given freely of their services in the determination of doubtful forms, an aid which gives an added value to the list as published.

There are doubtless errors in the list, for which I accept full responsibility. Many of these errors will, I think, prove errors of omission and concerning these I trust the critic will reflect that they might have been avoided had he responded to the many requests for data made during the past few years. Other errors will doubtless be those of judgment and concerning these I have no excuse to offer. The list as presented is my best judgment as to the constituent members of the State flora, and makes no claim to being the final utterance upon the subject.

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Its occurrence near Hanover, with some account of its habitat.

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List of 722 species.

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Notes on habits of plants growing in vicinity of Hanover.

—— *Quercus* Near Hanover, Ind. Bot. Bull., 1:2. (Nov. 1875.)

Mentions nine species in vicinity.

—— *Diarrhena Americana* Beauv. Bot. Bull., 1:6. (Dec. 1875.)

Notes occurrence of this plant in Clifty Ravine.

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Notes variations of this plant in vicinity; suggest union of species of *Dentaria* under one name.

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Notes occurrence in Jefferson County.

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Note of station near Hanover.

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- Notes station in Jefferson County, and poisonous effect; cf. Bot. Gazette, 3:54-55 and 79, on latter point.

PLANTS REPORTED AS MEMBERS OF THE STATE FLORA, OMITTED
FROM THE PRESENT CATALOGUE.

The following plants, reported as occurring in the State by the authors of various local catalogues, have been omitted from the list. This has been done because of an inability to secure verifying specimens, and also, in almost every case, because of range improbabilities. Some of the plants omitted are from the far north, others are coast plants, still others are mountain forms. It is not asserted that they do not occur in the State, but that in view of the objections to their occurrence previously given, they must for the present be omitted :

DRYOPTERIS FILIX-MAS (L.) Schott. Male Fern.

(*Aspidium Filix-Mas* Sw.)

State Catalogue.

CHEILANTHES LANOSA (Michx.) Watt. Hairy-lip Fern.

Gibson.

EQUISETUM SYLVATICUM L. Wood Horse-tail.

Underwood.

POTAMOGETON CONFEROIDES Reichb. Alga-like Pondweed.

Hamilton (Wilson).

ZIZANIOPSIS MILIACEA (Michx.) Doell and Aschers Zizaniopsis.

Steuben (Bradner).

CINNA LATIFOLIA (Trev.) Griseb. Slender Wood Reed-grass.

(*C. pendula* Trin.)

Steuben (Bradner).

CAREX PRASINA Wahl. Drooping Sedge.

Steuben (Bradner).

CAREX EXILIS Dewey. Coast Sedge.

Steuben (Bradner).

PERAMIMUM REPENS (L.) Salisb. Lesser Rattlesnake Plantain.

(*Goodyera repens* R. Br.)

Steuben (Bradner).

POPULUS BALSAMIFERA L. Tacamahac. Balsam Poplar.

Steuben (Bradner).

RUMEX OCCIDENTALIS S. Wats. Western Dock.

Jefferson (J. M. Coulter); Clark (Baird and Taylor).

RUMEX SANGUINEUS L. Bloody or Red-veined Dock.

Clark (Baird and Taylor); Jefferson.

- ATRIPLEX PATULA* L. Spreading Orache.
Steuben (Bradner).
- AMARANTHUS CRISPUS* (Lesp. and Thev.) Braun.
Putnam (MacDougal).
- AMARANTHUS PUMILUS* Raf. Coast Amaranth.
Union (MacDougal).
- ANEMONE PARVIFLORA* Michx. Northern Anemone.
Steuben (Bradner).
- RIBES LACUSTRE* (Pers.) Poir. Swamp Gooseberry.
St. Joseph (Rothert).
- GEUM RADIATUM* Michx. Yellow Mountain Avens.
Hamilton and Marion (Wilson).
- ROSA NITIDA* Willd. Northeastern Rose.
Wayne (Phinney).
- MALUS MALUS* (L.) Britton. Apple.
(*Pyrus Malus* L.)
Hamilton and Marion (Wilson).
- AMELANCHIER ALNIFOLIA* Nutt. Northwestern June or Service-berry.
Jefferson.
- GERANIUM ROBERTIANUM* L. Red Robin. Herb Robert.
Dearborn (Collins).
- OXALIS ACETOSELLA* L. White or True Wood-sorrel. Alleluia.
Dearborn (Collins); Laporte.
- SIDA HERMAPHRODITA* (L.) Rusby. Virginia Mallow.
(*S. Napæa* Cav.)
Steuben (Bradner).
- EPILOBIUM PALUSTRE* L. Marsh or Swamp Willow-herb.
Steuben (Bradner).
- AZALEA NUDIFLORA* L. Wild Honeysuckle. Pinkster-flower. Purple
or Pink Azalea.
Monroe.
- KALMIA ANGUSTIFOLIA* L. Sheep-laurel. Lambkill. Wicky.
Monroe.
- KALMIA LATIFOLIA* L. American or Mountain Laurel. Calico bush.
Monroe.
- OXYDENDRUM ARBOREUM* (L.) D. C. Sour-wood. Sorrel-tree.
Monroe.

ANDROSACE OCCIDENTALIS Pursh. Androsace.

Knox (Spillman).

UTRICULARIA SUBULATA L. Tiny or Zigzag Bladderwort.

Steuben (Bradner).

GALIUM LATIFOLIUM Michx. Purple Bedstraw.

Steuben (Bradner).

VIBURNUM NUDUM L. Larger Withe-rod.

Steuben (Bradner).

NABALUS SERPENTARIUS (Pursh). Hook. Lion's-foot. Gall-of-the-Earth.

(*Prenanthes serpentaria* Pursh.)

Steuben (Bradner).

COLEOSANTHUS GRANDIFLORUS (Hook) Kuntze. Large-flowered Thoroughwort.

Hamilton (Wilson).

ASTER TENUIFOLIUS L. Perennial Saltmarsh Aster.

Steuben (Bradner).

GNAPHALIUM DECURRENS Ives. Clammy Everlasting. Winged Cudweed.

Steuben (Bradner).

TANACETUM VULGARE CRISPUM D. C.

State Catalogue.

LIST OF FERNS, FERN ALLIES AND FLOWERING PLANTS OCCURRING IN INDIANA.

PTERIDOPHYTA.

FERNS AND FERN ALLIES.

OPHIOGLOSSACEÆ. Adder's-tongue Family.

OPHIOGLOSSUM L.

O. VULGATUM L. Adder's-tongue.

Reported from a few southern counties, in moist meadows and thickets, or sometimes on dry hillsides.

Jefferson, Crawford, Gibson and Monroe.

BOTRYCHIUM Sw.

B. TERNATUM (Thurb.) Sw. Ternate Grape-fern.

Found throughout the State in moist meadows, woods, and on hillsides.

Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner); Gibson, Jefferson, and Lake.

B. VIRGINIANUM (L.) Sw. Virginia Grape-fern.

Frequent throughout the State in rich open woods.

Kosciusko (Chipman); Knox (Spillman); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner); Gibson, Jefferson, and Lake.

OSMUNDACEÆ. Royal Fern Family.

OSMUNDA L.

O. REGALIS L. Royal Fern.

Rare throughout the State in low wet woods and marshes.

Knox (Spillman); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner); Noble, Jefferson, and Floyd.

O. CINNAMONEA L. Cinnamon Fern.

Found throughout the State in wet places.

Vigo (Blatchley); Steuben (Bradner); Jefferson and Montgomery.

O. CLAYTONIA L. Clayton's Fern.

Reported from several counties, in swamps and on shaded banks.

Vigo (Blatchley); Gibson.

POLYPODIACEÆ. Fern Family.**ONOCLEA. L.****O. SENSIBILIS L.** Sensitive Fern.

Frequent in dense, moist woods.

Monroe and Vigo (Blatchley); Hamilton and Marion.

O. STRUTHIOPTERIS (L.) Hoffm. Ostrich Fern.

Occurs in moist thickets, especially along streams.

Montgomery.

WOODSIA R. Br.**W. OBTUSA (Spreng) Torr.** Blunt-lobed Woodsia.

Jefferson and Gibson.

DICKSONIA L'Her.**D. PUNCTIOBULA (Michx.) Gray.** Hay-scented Fern.*(D. pilosiuscula Willd.)*

Found throughout the State in various situations, most abundant on open hillsides.

Steuben (Bradner); Clark, Floyd, and Gibson.

CYSTOPTERIS Bernh.**C. BULBIFERA (L.) Bernh.** Bulbet Cystopteris.

Found on wet rocks and in ravines, especially on limestone.

Monroe, Crawford and Vigo (Blatchley); Marion (Wilson); Jefferson, and Tippecanoe.

C. FRAGILIS (L.) Bernh. Brittle Fern.

In moist grassy woods and on rocks. Scarce.

Vigo (Blatchley); Hamilton (Wilson).

DRYOPTERIS Adans.

D. ACROSTICHOIDES (Michx.) Kuntze. Christmas Fern.

(Aspidium acrostichoides Sw.)

Common throughout the State, in woods and on sides of ravines, in rich soil.

Knox (Spillman); Vigo (Blatchley); Steuben (Bradner); Hamilton and Marion (Wilson).

D. NOVEBORACENSIS (L.) Gray. New York Fern.

(Aspidium Noveboracense Sw.)

Found in moist woods and thickets.

D. THELYPTERIS (L.) Gray. Marsh Shield-fern.

(Aspidium Thelypteris Sw.)

Abundant throughout the State in low wet meadows and prairies, rarely in dry soil.

Shriner Lake (Deam); Vigo (Blatchley); Hamilton (Wilson).

D. GOLDIEANA (Hook) Gray. Goldie's Fern.

(Aspidium Goldieanum Hook.)

Found in deep gorges leading into the principal streams.

D. MARGINALIS (L.) Gray. Evergreen Wood-fern.

(Aspidium marginale Sw.)

Found on the sides of ravines, in rocky woods and on banks.

Putnam and Vigo (Blatchley).

D. SPINULOSA INTERMEDIA (Muhl.) Underw.

(Aspidium spinulosum intermedium D. C. Eaton.)

Common in moist, dense woods.

Monroe and Vigo (Blatchley); Hamilton (Wilson); Putnam (Hubbard).

PHEGopteris Fée.

P. PHEGopteris (L.) Underw. Long Beech-fern.

In moist woods and on hillsides.

Putnam (Underwood).

P. HEXAGONOPTERA (Michx.) Fée. Broad Beech-fern.

Common on wooded hillsides in moist rich soil.

Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson).

P. DRYOPIERIS (L.) Fée. Oak-fern.

In moist woods, thickets, and swamps.

Allen (Sanford).

WOODWARDIA J. E. Smith.

W. VIRGINICA (L.) J. E. Smith. Virginia Chain-fern.

Occurs in swamps in the northern counties.

Lake and Laporte.

CAMPTOSORUS Link.

C. RHIZOPHYLLUS (L.) Link. Walking Fern.

Abundant in southern counties on dry rocks, preferring limestone.

Knox (Spillman); Jefferson; Clark; Crawford.

ASPLENIUM L.

A. PINNATIFIDUM Nutt. Pinnatifid Spleenwort.

Occurs on rocks.

Gibson.

A. EBENOIDES R. R. Scott. Scott's Spleenwort.

Occurs on limestone rocks.

Jefferson (J. M. Coulter); Crawford (Blatchley).

A. PLATYNEURON (L.) Oakes. Ebony Spleenwort.

(*A. ebenum* Ait.)

On sides of ravines and damp wooded slopes, preferring limestone soils.

Vigo (Blatchley); Steuben (Bradner).

A. TRICHOMANES L. Maiden-hair Spleenwort.

Occurs on rocks, preferring limestone.

Gibson.

A. ANGUSTIFOLIUM Michx. Narrow-leaved Spleenwort.

Common in central and southern part of State on sides of ravines.

Vigo (Blatchley); Hamilton (Wilson); Tippecanoe.

A. RUTA-MURARIA L. Wall Rue Spleenwort.

Occurs abundantly in southern part of the State.

Jefferson, Clark, and Floyd.

A. ACROSTICHOIDES Sw. Silvery Spleenwort.

(A. *thelypteroides* Michx.)

Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

A. FILIX-FOEMINA (L.) Bernh. Lady-fern.

Occurs in woods, thickets, and by walls and fences.

ADIANTUM L.

A. PEDATUM L. Maiden-hair Fern.

Occurs throughout the State in moist hillside thickets and woods.

Decatur and Shelby (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

PTERIS L.

P. AQUILINA L. Brake.

Throughout the State in open places along fence-rows and edge of thickets.

PELLEA Link.

P. ATROPURPUREA (L.) Link. Purple-stemmed Cliff-brake.

Occurs on rocks, preferring limestone.

CHEILANTHES Sw.

C. LANOSA (Michx.) Watt. Hairy Lip-fern.

(C. *lanuginosa* Nutt.)

Occurs on rocks.

Gibson.

POLYPODIUM L.

P. VULGARE L. Common Polypody.

Occurs on rocks or on rocky banks.

Steuben (Bradner); Montgomery and Parke.

P. POLYPODIOIDES (L.) A. S. Hitchcock. Gray Polypody.

Occurs in southern part of the State on trees or rarely on rocks.

Clark, Floyd, Perry, Gibson, Posey, and Jefferson.

SALVINIACEÆ. Salvinia Family.

AZOLLA Lam.

A. CAROLINIANA Willd. Carolina Azolla.

Floating on still water.

EQUISETACEÆ. Horsetail Family.

EQUISETUM.

E. ARVENSE L. Field Horsetail.

Occurs commonly, throughout the State on moist, sandy or gravelly banks.

Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Gibson.

E. FLUVIATILE L. Swamp Horsetail.

Occurs on the margins of ponds or in shallow water.

Vigo (Blatchley); Lake (Hill).

E. ROBUSTUM A. Br. Stout Scouring-rush.

Occurs in counties along the Ohio river.

E. HYEMALE L. Common Scouring-rush.

Occurs in wet soil, along railways, rivers, and old canals.

Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

E. LAEVIGATUM A. Br. Smooth Scouring-rush.

Along streams and rivers, especially in clay soils.

Lake (Hill).

E. VARIEGATUM Schleich. Variegated Equisetum.

This species has been reported from Lake County by Rev. E.J. Hill.

LYCOPODIACEÆ. Club-moss Family.

LYCOPODIUM L.

L. LUCIDULUM Michx. Shining Club-moss.

Occurs in cold, damp woods.

Putnam (Underwood); Steuben (Bradner).

L. INUNDATUM L. Bog Club-moss.

Occurs in sandy bogs in northern counties.

Steuben (Bradner); Lake (Hill).

L. OBSCURUM L. Ground Pine.

In moist woods.

Lake and Montgomery.

L. COMPLANATUM L. Trailing Christmas-green.

In woods and thickets.

Lake, Laporte, Putnam, and Monroe.

SELAGINELLACEÆ.**SELAGINELLA** Beauv.**S. RUPESTRIS (L.) Spring.** Rock Selaginella.

Occurs on dry rocks.

Lake (Hill); Gibson, and Montgomery.

S. APUS (L.) Spring. Creeping Selaginella.

In moist shaded places, often among the grass.

Gibson, Jefferson, and Tippecanoe.

SPERMATOPHYTA.**SEED-BEARING PLANTS.**

Class 1.**GYMNOSPERMÆ.****PINACEÆ.** Pine Family.**PINUS L.****P. STROBUS L.** White Pine.

Reported from a few counties in the southern, and a few in the northern, part of the State, also found in various hill regions through the central counties. The tree in this State does not reach its full development, and is much less valuable than farther north. Its scant distribution gives it no local value, although it is the most common and valuable building material of the northern States, and is used for an almost infinite variety of other purposes.

P. DIVARICATA (Ait.) Sudw. Gray or Northern Scrub Pine.*(P. Banksiana Lamb.)*

In the central and northern part of the State, occurring in scant numbers. A small tree from thirty to sixty feet high and rarely exceeding two and one-half feet in diameter. Too local to be of economic value.

Lake (Hill); Putnam (MacDougal).

P. ECHINATA Mill. Yellow Pine. Spruce Pine.

(*P. mitis* Michx.)

Found in the southern counties. This tree does not reach its full development in this State, in many regions being but little more than a shrub. In its full development it reaches a height of 100 feet, with a diameter of from 3 to 4½ feet. It is largely manufactured into lumber, and is the most valuable of the yellow pines.

LARIX Adans.

L. LARICINA (Du Roi) Koch. Black Larch. Tamarack.

(*L. Americana* Michx.)

Found only in northern counties, where it is fairly abundant in wet soils, being the character tree of the so-called "tamarack swamps." The species is rapidly disappearing as the result of drainage. A tree from eighty to one hundred feet high with a diameter of from two to three feet. Wood heavy, hard, very strong and durable in contact with the soil. Used for posts, telegraph poles and railway ties.

TSUGA Carr.

T. CANADENSIS (L.) Carr. Hemlock.*

This species occurs in Putnam County in a single location of considerable extent. I quote from a letter of Mr. W. H. Ragan, who sent at the same time abundant specimens: "In the northeast portion of this (Putnam) county, Jackson Township, on the sandstone bluffs of Walnut Creek, in and along its deep and tortuous canyon, the hemlock spruce has existed in its native beauty from a time long anterior to the present historic period. The general course of Walnut Creek through Jackson Township is southwesterly, and its canyon is deep (for this comparatively level country) and tortuous. The upper geological formation is a shelly limestone, that rests upon a light blue or gray sandstone, through which the stream has worn its way to a depth of fifty or sixty feet, forming almost perpendicular bluffs, first on one side of the creek and then on the other. On these bluffs and extending back over small portions of the adjacent level lands and intermingling with our more common forest trees a hemlock grove, now largely cut away for its timber and its bark and to make way for the plow and other implements of the farmer, was discovered by the pioneer settlers who located in this region in the early years of the third decade of this century. This isolated grove occupied its limited area in the midst of the giant forest of deciduous

*The hemlock occurs also in Russell Township, Putnam County, on the banks of Racoon Creek, two miles northeast of Portland Mills.—W. S. B.

timber that originally prevailed throughout the central portion of our State. Its latitude is about $39^{\circ} 45'$, and its longitude $86^{\circ} 50'$, while it is elevated about 1,000 feet above the sea. In extent it is about seven or eight miles in length, following the meanderings of the creek, and according to my observations, which are confirmed by the testimony of others, is wholly confined to the east or left bank of the stream. An additional feature of interest is that among these semioxotic groves may be found another conifer, elsewhere unknown in the flora of this immediate section, the American Yew, *Taxus baccata*, where it trails over the rocks and luxuriates in the deep cool shade of its more majestic foster relative."

TAXODIUM L. C. Rich.

T. DISTICHUM (L.) L. C. Rich. Bald Cypress.

Found only in the southwestern counties, where the so-called cypress swamps cover an area of nearly 20,000 acres. A large tree of high economic value, from 80 to 100 feet high, with a trunk from six to thirteen feet in diameter, growing in deep, submerged swamps and river bottoms, often forming dense forests. Wood light, soft, straight grained; easily worked and extremely durable in contact with the soil, but not strong. Manufactured into lumber, and used for construction, cooperage, railway ties, posts, fencing, etc. The recklessly extravagant use of this valuable tree is rapidly reducing its available area. Especially valued for the durable shingles made from it. A cypress roof is good for 20 or more years. (Schneck)

THUJA L.

T. OCCIDENTALIS L. Arbor-Vitæ. White Cedar.

Found only in the northern counties, and not occurring there in any marked abundance. A tree 40 to 60 feet high, with a diameter at times from three to five feet, growing in cold, wet swamps and along rocky creek banks. The wood is light, soft and brittle, but being durable in contact with the soil, it is largely used for posts, railway ties, fencing, and to a less extent for shingles. Largely cultivated as a hedge plant.

CHAMÆCYPARIS Spach.

C. THYOIDES (L.) B. S. P. Southern White Cedar. Cypress.

(*C. sphæroidea* Spach.)

A few specimens of this conifer are to be found in Allen County, upon the authority of Dr. C. R. Dryer. Its occurrence in our area must be considered as exceptional.

JUNIPERUS L.

J. COMMUNIS L. Juniper.

Found in dry, sandy soils in a few counties, usually growing on hillsides. Nowhere abundant.

Vigo (Blatchley); Steuben (Bradner).

J. NANA Willd. Low Juniper.

Found very sparingly in the central and northern counties in dry, sandy soil in upland situations.

Flowers in May.

Hamilton (Wilson); Kosciusko, Lake, Porter, Steuben, and Lagrange.

J. VIRGINIANA L. Red Cedar.

Found throughout the State, being especially abundant in the hill regions of the southern counties, lessening in number and decreasing in size in the central counties, and increasing again in both numbers and size in the northern counties. A tree from 75 to 100 feet high and with a trunk diameter of from two to four feet, a size not reached in the State to my knowledge. It thrives best on dry, gravelly ridges and limestone hills. The odorous wood is light and soft and easily worked, and is durable in contact with the soil. Used for posts, sills, railway ties, cabinet making, and almost exclusively for lead pencils.

TAXACEÆ. Yew Family.

TAXUS L.

T. MINOR (Michx.) Britton. American Yew. Ground Hemlock.

(*T. Canadensis* Willd.)

Found only in Putnam County, associated with *Tsuga Canadensis*. The occurrence of both of these species in our area is exceedingly difficult of explanation, their range being far to the north.

Class 2.

ANGIOSPERMÆ.

Sub-class 1.

MONOCOTYLEDONES.

TYPHACEÆ. Cat-tail Family.

TYPHA L.

T. LATIFOLIA L. Broad leaved Cat-tail.

In all parts of the State in marshes; very abundant, frequently exclusively occupying large areas.

Flowers in June and July; fruits in August and September.

Tippecanoe (Cunningham); Laporte (Barnes); Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Round Lake (Deam); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

T. ANGUSTIFOLIA L. Narrow-leaved Cat-tail.

Reported from a few of the northern counties and verified by herbarium specimens. Of very occasional occurrence.

Flowers in June and July; fruits in August and September.

Steuben (Bradner).

SPARGANIACEÆ. Bur-reed Family.

SPARGANIUM L.

S. EURYCARPUM Engelm.

In many counties of the State in swamps and along the borders of ponds and streams. As a rule of no great abundance in its stations.

Flowers in May, continuing through August.

Vermillion (Wright); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. ANDROCLADUM (Engelm.) Morong. Branching Bur-reed.

(*S. simplex androcladum* Engelm.)

Reported only from the southwestern counties and growing rather plentifully locally, in the shallow waters of ponds and swamps.

Flowers from June through August.

Gibson.

S. SIMPLEX Huds.

In the central and northern parts of the State, in ponds and on the borders of streams. Exceptionally found.

Flowers in July and August.

Hamilton (Wilson); Fayette (Hessler).

S. MINIMUM Fries. Small Bur-reed.

Reported only from the northern part of the State, where it is found sparingly in ponds and sluggish streams.

Flowers in June and July.

Lake (Hill).

NAIADACEÆ. Pondweed Family.

POTAMOGETON L.

P. NATANS L. Common Floating Pondweed.

Throughout the State in ponds, the shallow waters of lakes and in sluggish streams.

Flowers in July and August.

Vigo (Blatchley); Steuben (Bradner).

P. AMPLIFOLIUS Tuckerm. Large-leaved Pondweed.

Reported only from northern counties as growing in the inland lakes in quiet bays.

Flowers from July until in September.

Lake (Hill); Hamilton (Wilson).

P. PULCHER Tuckerm. Spotted Pondweed.

Northern counties, in ponds and pools about lakes. Detected as a member of the State flora by E. J. Hill.

Flowers in July.

Lake (Hill).

P. NUTTALLII Cham. and Sch.

(*P. Pennsylvanicus* Cham.)

In ponds and streams throughout the State, apparently more abundant in the southern counties.

Flowers in June and July.

Steuben (Bradner); Gibson.

P. LONCHITES Tuckerm. Long-leaved Pondweed.

Throughout the State in ponds and sluggish streams. Plentiful in the stations from which it is reported.

Flowers from July through September.

Gibson (Schneck); Lake (Hill).

P. HETEROPHYLLUS Schreb.

Reported only from the extreme northern and southern counties, but doubtless occurring in all parts of the State. A very variable and puzzling species.

Flowers from July until September.

Steuben (Bradner); Lake (Hill).

P. ZIZII Roth.

In ponds and sluggish streams in the northern counties of the State. Of sparing occurrence in its stations.

Flowers in July and August.

Lake (Hill).

P. LUCENS L. Shining Pondweed.

Found locally in ponds and swamps in a few counties of the State.

Flowers in September and October.

Steuben (Bradner); Gibson.

P. PRÆLONGUS Wulf. White-stemmed Pondweed.

Reported only from the northern part of the State by E. J. Hill, though probably of wider distribution.

It fruits in June and July and usually withdraws its stems beneath the water as soon as the fruit is set.

Lake (Hill).

P. PERFOLIATUS RICHARDSONII A. Bennett.

(*P. perfoliatus lanceolatus* Robbins.)

In the northern counties in ponds and streams. Probably of wider distribution than reports indicate.

Flowers in July and August.

Laporte (Hill).

P. ZOSTEREFOLIUS Schum. Eel-grass Pondweed.

Common throughout the State, usually in still water, though occasionally found in quite swift streams.

Flowers in July and August.

Laporte (Barnes); Steuben (Bradner); Lake (Hill); Carroll.

P. FOLIOSUS Raf.

(*P. pauciflorus* Pursh.)

Throughout the State, in shallow ponds and ditches. Usually abundant in the stations in which it occurs.

Flowers in July and August.

Jasper (J. M. Coulter); Hamilton (Wilson); Fayette (Hessler); Vigo (Blatchley); Jefferson and Gibson.

P. FOLIOSUS NIAGARENSIS (Tuckerm.) Morong.

(*P. pauciflorus Niagarensis* Gray.)

A larger form than the preceding, found in similar situations. Reported from the northern counties.

Flowers in July and August.

Laporte.

P. PUSILLUS L. Small Pondweed

In sluggish streams and shallow waters throughout the State.
Not abundant in any of its stations.

Flowers in July and August.

Gibson (Schneck).

P. DIVERSIFOLIUS Raf.

(*P. hybridus* Michx.)

In many parts of the State in ponds and swamps. Quite abundant in the stations in which it occurs.

Flowers from June until September.

Vigo (Blatchley); Lake and Laporte (Hill).

P. SPIRILLUS Tuckerm.

Reported from the southern part of the State, but doubtless to be found throughout our area in ponds and sluggish waterways.

Flowers from June until August.

Vigo (Blatchley).

P. PECTINATUS L. Fennel-leaved Pondweed.

Found in the Wabash River in various parts of its course, more plentifully in its lower stretches.

Flowers in July and August.

P. INTERRUPTUS Kitaibel.

In the northern part of the State in shallow, still or sluggish waters.

Flowers in July and August.

Lake (Hill).

P. ROBBINSII Oakes.

In the northern part of the State in shallow waters of lakes and in swamps. Added to the flora by Rev. E. J. Hill.

Flowers in August and September.

Lake (Hill); Steuben (Bradner).

ZANNICHELLIA L.

Z. PALUSTRIS L.

Collected from a single locality near Terre Haute. The station was a pond south of a blast furnace. The pond rarely froze on account of the warm stream of water flowing into it from the furnace. Detected first in 1886 and its continuance noted until 1893. At

that time the furnace shut down, the pond soon after drying up. The plant is probably no longer a member of our flora.

Flowers from July through September. In the station mentioned specimens in fruit were collected in April.

Vigo (Coulter).

NAIAS L.

N. FLEXILIS (Willd.) Rost. and Schmidt.

In the lower Wabash and in the pools and swamps adjoining. Not uncommon, but nowhere abundant.

Flowers in June and July.

N. GRACILLIMA (A. Br.) Morong.

(*N. Indica gracillima* A. Br.)

In pools and shallow, still waters in the southwestern counties. The species occurs sparingly in a few stations and has been rarely collected.

Flowers in July and August.

Gibson (Schneck).

SCHEUCHZERIACEÆ. Arrow-grass Family.

TRIGLOCHIN L.

T. PALUSTRIS L. Marsh Arrow-grass.

In bogs and swamps in the northern part of the State. It probably does not extend southward in the State to any great extent.

Flowers in July and August.

Lake (Hill).

T. MARITIMA L. Seaside Arrow-grass.

Found in marshes and cold bogs in the northern counties. Recognized as a member of the State flora by E. J. Hill.

Flowers in July and August.

Lake (Hill).

SCHEUCHZERIA L.

S. PALUSTRIS L.

In the central and northern counties in marshes and bogs. Especially abundant in cold peat bogs.

Flowers from June through August.

Cass and Marshall (Hessler).

ALISMACEÆ. Water Plantain Family.

ALISMA L.

A. PLANTAGO-AQUATICA L. Water Plantain.

(A. *Plantago* L.)

Found throughout the State in shallow waters and in mud, usually very plentiful in the stations in which it occurs.

Flowers from June until September.

Tippecanoe (Cunningham); Laporte (Barnes); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Kosciusko (Coulter).

ECHINODORUS* Rich.

E. CORDIFOLIUS (L.) Griseb. Upright Bur-head.

(E. *rostratus* Engelm.)

Reported only from the southern part of the State and probably not extending far northward, as the species is southern in its mass distribution. It was first reported by W. S. Blatchley in 1889, as growing abundantly in mud flats on the borders of a pond.

Flowers in June and July.

Vigo (Blatchley).

SAGITTARIA L.

S. ENGELMANNIANA J. G. Smith.

(S. *variabilis gracilis* Engelm.)

Common, especially in the central part of the State in shallow water and along the wet shores of sluggish streams.

Flowers in August and September.

Putnam (MacDougal); Fayette (Hessler); Hamilton (Wilson); Decatur (Ballard).

S. LATIFOLIA Willd. Broad-leaved Arrow-head.

(S. *variabilis* Engelm.)

Common in the shallow waters of ponds and ditches, extending often far out on low muddy banks.

Flowers in July and August.

Tippecanoe (Cunningham); Daviess (Clements); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. LATIFOLIA PUBESCENS (Muhl.) J. G. Smith.

(S. *variabilis pubescens* Engelm.)

In similar situations as the preceding, but less common and less widely distributed.

Flowers in July and August.

Hamilton and Marion (Wilson).

S. RIGIDA Pursh.*(S. heterophylla* Pursh.)

Throughout the State in swamps and shallow water. Varies greatly in appearance in different situations. When growing in running water the petioles become rigid.

Flowers from late in May through August.

Round Lake (Deam); Vigo (Blatchley).

S. GRAMINEA Michx. Grass-leaved Arrow-head.

Throughout the State, growing in mud or shallow water. Abundant in all stations from which it is reported. "The early leaves are often purplish." (Britton and Brown).

Flowers from July through September.

Tippecanoe (Cunningham); Laporte (Barnes); Kosciusko (Coulter).

VALLISNERIACEÆ. Tape-grass Family.**PHILOTRIA** Raf.**P. CANADENSIS** (Michx.) Britton. Water-weed. Ditch-moss.*(Elodea Canadensis* Michx.)

Abundantly found in ponds and shallow waters in all parts of the State. Extremely variable in our area.

Flowers from May until August.

Laporte (Barnes); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner); Kosciusko and Tippecanoe (Coulter).

VALLISNERIA L.**V. SPIRALIS** L. Tape-grass. Eel-grass.

Throughout the State in quiet waters of swamps and lakes. Quite common in most of its stations. "The wild celery of Chesapeake Bay and a favorite food of the canvas-back duck" (Britton and Brown).

Flowers in August and September.

Jefferson (J. M. Coulter); Clark (Baird and Taylor); St. Joseph (Barnes); Vigo (Blatchley); Steuben (Bradner).

GRAMINEÆ. Grass Family.**ANDROPOGON** L.**A. SCOPARIUS** Michx. Brown Beard-grass.

Common, especially northward, growing in dry, rather sandy soil. Flowers from July to September.

Elkhart (Barnes); Vigo (Blatchley); Steuben (Bradner).

A. FURCATUS Muhl. Forked Beard-grass.

A common form on prairie soil, either moist or dry, where it furnishes a large amount of hay.

Flowers in August and September.

Jefferson (Barnes); Vigo (Blatchley); Steuben (Bradner).

A. VIRGINICUS L.

Common especially southward, growing on sandy and gravelly banks, in either dry or damp soils.

Flowers in September and October.

Vigo (Blatchley).

CHRYSOPOGON Trin.

C. AVENACEUS (Michx.) Benth. Indian Grass.

(*C. nutans* Benth.)

Rather common in sandy, waste places and on hillsides in dry situations. Growing ordinarily rather sparsely.

Flowers from August until in October.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo (Blatchley); Marion (Moffatt).

SORGHUM Pers.

S. HALAPENSE (L.) Pers. Johnson Grass.

"This was introduced, and is occasionally found escaped from cultivation; it is considered valuable farther south and on the dry lands farther west, but its good qualities have not yet been determined here. It is very late in starting in the spring, but holds on well into the autumn, and for that reason might be valuable as furnishing fall feed." (J. Troop, Grasses of Indiana, p. 42.)

Flowers September and October.

PASPALUM L.

P. MUCRONATUM Muhl.

(*P. fluitans* Kunth.)

A southern form which is found in wet soils along streams and in swamps in the southern counties of the State.

Flowers in September.

P. SETACEUM Michx. Slender Paspalum.

Common in dry, sandy soil in open places throughout the State. Stem mostly *decumbent*.

Flowers in August and September.

Jefferson (Barnes); Vigo (Blatchley).

P. CILIATIFOLIUM Michx. Ciliate-leaved Paspalum.

Common in waste places in dry, sandy soil in the southern part of the State.

Flowers from June until late in August.

Vigo (Blatchley).

P. LAEVE Michx. Field Paspalum.

"Very common in wet land, especially in the southern part of the State, where it is said to produce large crops of hay." (J. Troop, Grasses of Indiana, p. 38).

Flowers in August and September.

SYNTHERISMA Walt.

S. SANGUINALIS (L.) Nash. Crab grass. Finger-grass.

(*Panicum sanguinale* L.)

Throughout the State in cultivated or waste places. In our area it is considered a troublesome weed, but farther south is reported to make valuable hay.

Flowers in August and October.

Tippecanoe (Cunningham); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. LINEARIS (Krock.) Nash. Small Crab-grass.

(*Panicum glabrum* Gaud.)

Introduced in our area. A small, spreading form, common in lawns late in the season, where it becomes a great nuisance. (Troop, Grasses of Indiana, p. 38.)

Flowers in August and September.

Jefferson.

S. FILIFORMIS (L.) Nash. Slender Finger-grass.

(*Panicum filiforme* L.)

Commonly found throughout the State on dry, sandy soil.

Flowering season, August and September.

PANICUM L.

P. CRUS-GALLI L. Barn-yard Grass.

A coarse, branching grass from one to four feet high, found in rich, moist, waste places throughout the State. Especially abundant about neglected barn-yards.

Flowers from August through October.

Tippecanoe (Cunningham); Round Lake (Deam); Vigo (Blatchley); Hamilton and Marion (Wilson); Jefferson and Gibson; Steuben (Bradner).

P. WALTERI Pursh. Salt-marsh Cockspur Grass.

Somewhat common in moist soils, especially in the southern part of the State.

Flowers in July and August.

Daviess (Clements).

P. ROSTRATUM Muhl. Beaked Panicum.

(*P. anceps* Michx.)

Found in moist soils throughout the State. More abundant in the central and northern counties, though found also in the southern. Resembles the species next following, but does not make such valuable hay.

Flowers in July and August.

Jefferson and Gibson.

P. AGROSTIDIFORME Lam.

(*P. agrostoides* Muhl.)

Abundant in wet grounds and along streams in the southern counties. "It makes a large amount of foliage, which makes good hay if cut before flowering." (Troop.)

Flowers in July and August.

Steuben (Bradner).

P. MICROCARPON Muhl. Small-fruited Panicum.

In the southern counties in shaded places, in rather dry soil. Somewhat abundant in its stations.

Flowers in July and August.

Daviess (Clements).

P. PORTERIANUM Nash.

(*P. latifolium* Walt.)

In thickets and open woods in the southern counties. Quite common, especially in rich, moist soils.

Flowers in June and July.

Vigo (Blatchley).

P. CLANDESTINUM L. Hispid Panicum.

A coarse, broad-leaved species, growing in wet meadows on the edge of thickets. Usually found in rich soils.

Flowers in June and July.

Cass (Hessler); Vigo (Blatchley); Steuben (Bradner).

P. SCRIBNERIANUM Nash. Scribner's Panicum.

In the northern part of the State, in dry, sandy soil. Not abundant.

Flowers in July and August.

Lake (Hill).

P. DICHOTOMUM L. Forked Panicum.

A very common and variable species, found in dry ground, usually in shaded places. Of no great value as a forage plant.

Flowers in July and August.

Tippecanoe (Cunningham); Vigo (Blatchley); Steuben (Bradner).

P. VISCIDUM Ell. Velvety Panicum.

In the southern counties of the State, in moist places. (Troop.) Not abundant.

Flowers in July and August.

P. PUBESCENS Lam. Hairy Panicum.

Common in many parts of the State, in dry soils. Most abundant along railway embankments.

Flowers in June and July.

Vigo (Blatchley).

P. DEPAUPERATUM Muhl. Starved Panicum.

Common throughout the State, growing in dry woods. (Troop.)

Flowers from June until September.

P. VIRGATUM L. Tall Panic-grass.

A tall, perennial grass, from three to five feet high, growing in clumps along sandy river banks. "A very prolific species which makes good hay if cut when young, but which is too harsh and woody when ripe." (Troop.) Common throughout the State.

Flowers in August and September.

Vigo (Blatchley); Marion (Moffatt); Jasper.

P. AMARUM Ell. Sea-beach Panicum.

I have not seen this species. It is admitted to the flora of the State upon the authority of Professor W. S. Blatchley, who reports it as occurring in Vigo County. The form is a sea beach form, and its occurrence in our bounds must be regarded as very exceptional.

P. PROLIFERUM Lam. Spreading Panicum.

Found in marshy places, especially in wet sandy or gravelly soils, in the southern counties. Usually abundant.

Flowers in July and August.

Vigo (Blatchley); Marion (Moffatt).

P. CAPILLARE L. Witch Grass Tumble weed.

Commonly found throughout the State in sandy soil and as a weed in cultivated fields.

Flowers in August and September.

Tippecanoe (Cunningham); Jefferson (Barnes); Round Lake (Deam); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. AUTUMNALE Bosc. Diffuse Panicum.

Found in the southwestern counties on sandy hillsides and banks and along railways. Common in its stations.

Flowers in September and October.

Vigo (Blatchley).

P. MINUS (Muhl.) Nash.

Common in dry soil in shaded places, in the southwestern counties of the State. Especially abundant upon hillsides.

Flowers in August and September.

Vigo (Blatchley).

IXOPHORUS Schlecht.**I. VERTICILLATUS (L.) Nash. Foxtail-grass.**

(*Setaria verticillata* Beauv.)

In waste places about dwellings. Reported only from Marion County.
Flowers in July and August.

I. GLAUCUS (L.) Nash. Yellow Foxtail. Pigeon-grass.

(*Setaria glauca* Beauv.)

Found everywhere in cultivated fields and waste places. Very frequently a troublesome weed.

Flowers from July through September.

Vigo (Blatchley); Hamilton and Marion (Wilson); Tippecanoe (Cunningham); Steuben (Bradner).

I. VIRIDIS (L.) Nash. Green Foxtail-grass.

(*Setaria viridis* Beauv.)

A very troublesome weed in gardens and cornfields. Common throughout the State.

Flowers from July until in September.

Tippecanoe (Hussey); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

I. ITALICUS (L.) Nash. Hungarian Grass. Italian Millet.

(Setaria Italica Kunth.)

Escaped from cultivation in the southern part of the State. Found in waste places adjoining cultivated areas, or in abandoned fields.

Flowers from June through August.

Vigo (Blatchley); Jefferson and Gibson; Steuben (Bradner).

CENCHRUS L.

C. TRIBULOIDES L. Bur-grass. Hedgehog-grass.

Found in dry, sandy soils in all parts of the State. The heads are covered with sharp, stout spines and are extremely distressing to stock. A noxious weed in many parts of the State.

Flowers in August and September.

Daviess (Clements); Clark (Barnes); Hamilton and Marion (Wilson); Vigo (Blatchley).

ZIZANIA L.

Z. AQUATICA L. Wild Rice. Water Oats.

In shallow water, near the margins of ponds and lakes, and in adjacent low grounds. Sometimes covering areas of many acres. Especially common in the northern part of the State.

Flowers from June through September.

Laporte (Barnes); Hamilton (Wilson); Round Lake (Deam); Vigo (Blatchley); Marshall and Kosciusko (Coulter); Gibson; Steuben (Bradner).

HOMALOCENCHRUS Mieg.

H. VIRGINICUS (Willd.) Britton. White Grass.

(Leersia Virginica Willd.)

Common in the southwestern part of the State in damp woods and moist shaded places.

Flowers in August and September.

Vigo (Blatchley); Marion; Steuben (Bradner).

H. ORYZOIDES (L.) Poll. Rice Cut-grass.

(Leersia oryzoides Swartz.)

Common in swamps and along streams, often forming dense, tangled masses.

Flowers in August and September.

Tippecanoe (Cunningham); Cedar Lake (Deam); Vigo (Blatchley); Steuben (Bradner).

H. LENTICULARIS (Michx.) Scribn. Catch-fly Grass.

(*Leersia lenticularis* Michx.)

Margins of ponds and in low, wet grounds in the southwestern part of the State. Not infrequent.

Flowers in July and August.

Vigo (Blatchley); Starke (Hill).

PHALARIS L.**P. ARUNDINACEA L. Reed Canary Grass.**

An evident escape from gardens in a few counties of the State. As an escape usually found in moist, rich soils.

Flowers in July and August.

Fayette (Hessler); Gibson.

P. CANARIENSIS L. Canary Grass.

This species "escapes" in almost every locality in which it is cultivated. It frequently occupies waste places completely. Brought into cultivation for the seeds, which are a favorite food of canary birds.

Flowers in July and August.

Fayette (Hessler); Jefferson and Gibson; Steuben (Bradner).

ANTHOXANTHUM L.**A. ODORATUM L. Sweet Vernal-grass.**

Found sparingly throughout the State in meadows and at the borders of cultivated fields. Quite frequent in the southern counties. Very fragrant in drying.

Flowers in June and July.

Vigo (Blatchley); Marion.

ARISTIDA L.**A. DICHOTOMA Michx. Poverty Grass.**

Frequent in the southern counties in dry, sandy places and along railway embankments. Of no great economic value.

Flowers in August.

Vigo (Blatchley).

A. GRACILIS Ell.

In the southern counties, in dry soil, usually growing in tufts. Of little, if any, economic value.

Flowers in August and September.

Jefferson.

A. RAMOSISSIMA Engelm.

Found in dry, sandy soil in the southern part of the State. Not frequent.

Flowers in August and September.

Jefferson and Gibson.

A. PURPURASCENS Poir.

Found growing in dry soils in many counties of the State, chiefly western. Quite common, but of no economic value.

Flowering season, August and September.

A. OLIGANTHA Michx.

Found in the counties bordering the Ohio and lower Wabash rivers, growing in dry soil.

Flowers in August and September.

Jefferson and Gibson.

A. TUBERCULOSA Nutt. Sea-beach Aristida.

In sandy soil along the lake beach.

Flowering season, from August to September.

Lake (Hill).

STIPA L.**S. SPARTEA** Trin. Porcupine Grass.

In sands and sandy prairies in the northwestern part of the State. Frequent but not abundant.

Flowers in June and July.

Lake (Hill).

ORYZOPSIS Michx.**O. ASPERIFOLIA** Michx. White-grained Mountain Rice.

Found in rich woods, especially in the northern counties of the State, where it is at times quite plentiful.

Flowers in May and June.

O. MELANOCARPA Muhl. Mountain Rice.

Quite frequent throughout the State in rocky woods. Especially plentiful in the southern hill counties.

Flowers in July and August.

Jefferson.

MILIUM L.

M. EFFUSUM L. Tall Millet Grass.

Growing in damp woods in the northern counties of the State.
"The plants multiply by the roots as well as by the seeds, thereby rendering it of considerable value for a permanent, wet station."
(Troop.)

Flowers in July and August.

MUHLENBERGIA Schreb.

M. SOBOLIFERA (Muhl.) Trin.

A small species with upright stem, commonly found throughout the State in rocky soils in woods and thickets.

Flowers in August and September.

Jefferson and Gibson.

M. MEXICANA (L.) Trin.

In swamps and low, moist places, in most parts of the State. Quite plentiful. This species is readily eaten by cattle.

Flowers from late in July until early in September.

Shriner Lake (Deam); Vigo (Blatchley).

M. RACEMOSA (Michx.) B. S. P.

(*M. glomerata* Trin.)

Found in marshes in nearly all of the northern counties, where it forms a large portion of the marsh hay.

Flowers in August and September.

Lake (Hill); Steuben (Bradner).

M. SYLVATICA Torr.

Common everywhere along the banks of streams and in moist woods.

Flowers in August and September.

Vigo (Blatchley).

M. TENUIFLORA (Willd.) B. S. P.

(*M. Willdenovii* Trin.)

Common in dry or rocky soils, in shaded places, throughout the State.

Flowers in August and September.

Jefferson.

M. DIFFUSA Schreb.

Common in dry soils; in the southern counties this species forms the main portion of the woods pasture.

Flowers in August and September.

Vigo (Blatchley); Marion, Jefferson, and Gibson.

M. CAPILLARIS (Lam.) Trin. Long-awned Hair-grass.

"Found in sandy soil in Marion County and occasionally in other localities." (Troop.)

Flowers in August and September.

Marion.

BRACHYELYTRUM Beauv.

B. ERECTUM (Schreb.) Beauv.

(*B. aristatum* Beauv.)

Common in moist woods in all parts of the State. Under natural conditions it does not grow thick enough to produce any considerable quantity of feed.

Flowers in June and July.

Gibson.

PHLEUM L.

P. PRATENSE L. Timothy.

Common throughout the State, in fields and along roadsides. It is largely cultivated and furnishes more hay, in our area, than any other species in cultivation.

Flowers in July and August.

Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

ALOPECURUS L.

A. GENICULATUS L. Marsh Foxtail.

(*A. geniculatus aristulatus* Torr.)

In marshy places, probably throughout the State. It has some value as a wet pasture grass.

Flowers in June and July.

Cass (Hessler); Hamilton (Wilson); Floyd (Clapp); Marshall (Hessler); Southern counties; Steuben (Bradner).

A. PRATENSIS L. Meadow Foxtail.

This species has become thoroughly naturalized and is found in most parts of the State, growing in pastures and meadows. It matures earlier than timothy, which it somewhat resembles in general appearance. Valuable as a pasture plant because of its early appearance.

Flowers in May and June.

SPOROBOLUS R. Br.

S. ASPER (Michx.) Kunth. Rough Rush-grass.

Found in the southwestern part of the State, where it is common in dry, sandy fields. The plant is too rough and coarse to have any value as a forage plant.

Flowers in August and September.

Vigo (Blatchley); Gibson and adjoining counties.

S. VAGINÆFLORUS (Torr.) Wood. Sheathed Rush-grass.

Common in the counties along the Ohio river, in dry, sandy soil.

Flowers in August and September.

Jefferson (Barnes).

S. CRYPTANDRUS (Torr.) Gray. Sand Dropseed.

Found in many parts of the State, growing in sandy soil in open places. A favorite forage plant with cattle and sheep.

Flowers in August and September.

Lake (Hill).

S. HETEROLEPIS Gray. Northern Dropseed.

It is found in the southwestern counties, growing in dry soil. "It makes fair hay but is not very productive." (Troop.)

Flowers in August.

Gibson and adjoining counties (Troop); Lake (Hill).

CINNA L.

C. ARUNDINACEA L. Wood Reed-grass.

A coarse grass growing in wet woods and marshes. Common and abundant throughout the State. The large leaves furnish a considerable quantity of very coarse, inferior fodder.

Flowers in July and August.

Tippecanoe (King); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Jefferson and Gibson.

AGROSTIS L.

A. ALBA L. Red-top. Herd's-grass.

(Includes *A. alba vulgaris* Thurb.)

An extremely variable form found in all parts of the State in moist, rich soils. It is largely cultivated for hay, and is also used

as a lawn grass, for this purpose being mixed with blue-grass. In most of our area the species is abundant, making one of our best meadow and pasture grasses.

Flowers in June and July.

Tippecanoe (Hussey); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

A. CANINA L. Brown Bent-grass.

"A low species, six to eighteen inches high, with a loose panicle and spikelets of a purplish color. It varies greatly in different localities. Found occasionally in various parts of the State." (Troop.)

Flowers from July until September.

A. PERENNANS (Walt.) Tuckerm. Thin-grass.

Of frequent occurrence throughout the State, growing in damp, shady places. Eaten readily by cattle and sheep.

Flowers from July until September.

Fayette (Hessler); Vigo (Blatchley); Jefferson.

A. HYEMALIS (Walt.) B. S. P. Hair-grass.

(*A. scabra* Willd.)

Widely distributed through the State, growing in either dry or moist soil. Plentiful in most of its stations, but of little value.

Flowers in June and July.

Vigo (Blatchley).

A. ALTISSIMA (Walt.) Tuckerm. Tall Bent-grass.

(*A. elata* Trin.)

"Found in Tippecanoe County in moist woods; quite abundant late in autumn, when it adds considerably to late fall feed." (J. Troop.)

Flowers in August and September.

A. INTERMEDIA Scribn. Upland Bent-grass.

Reported only from Vigo County, where this species was found growing in sparing numbers on dry hillsides.

Flowering specimens collected in August.

Vigo (Blatchley).

CALAMAGROSTIS Adans.

C. CANADENSIS (Michx.) Beauv. Blue-joint Grass.

Found in marshes and low, wet meadows and prairies in many counties of the State. It is one of the most productive of the marsh grasses and is frequently cut for hay.

Flowers in July and August.

Tippecanoe (Cunningham); Vigo (Blatchley); Marion and Lake; Steuben (Bradner).

C. *CONFINIS* (Willd.) Nutt. Bog Reed-grass.

Confined to the northern counties of the State, where it is found growing in swamps and low, wet bottom lands.

Flowers in July and August.

AMMOPHILA Host.

A. *ARENARIA* (L.) Link. Sea Sand-reed. Sea Mat-weed.

(*Calamagrostis arenaria* Roth.)

Found along the shores of Lake Michigan.

Flowers from August to September.

Lake (Hill).

CALAMOVILFA Hack.

C. *LONGIFOLIA* (Hook.) Hack. Reed-grasses.

(*Calamagrostis longifolia* Hook.)

On the beaches and sand stretches about the southern shore of Lake Michigan; probably confined to Lake and Porter counties.

Flowers in July and August.

Lake (Hill).

HOLCUS L.

H. *LANATUS* L. Velvet-grass.

Escaped from cultivation in many localities, and found in fields and waste places, apparently thriving best in moist soils.

Flowers in June and July.

Floyd (Clapp).

DESCHAMPSIA Beauv.

D. *CAESPITOSA* (L.) Beauv. Tufted Hair-grass.

In wet places on shores of lakes and streams.

Flowering season from July until August.

Steuben (Bradner).

D. *FLEXUOSA* (L.) Trin. Common Hair-grass.

Common in dry soil, in many parts of the State.

Flowers in June and July.

TRISETUM Pers.

T. *PENNSYLVANICUM* (L.) Beauv. Marsh False Oat.

(*T. palustre* Torr.)

Common in low, wet soils, in various counties of the State, perhaps more abundantly northward.

Flowers in June and July.

ARRHENATHERUM Beauv.

A. ELATIUS (L.) Beauv. Oat Grass.

(A. *avenaceum* Beauv.)

This species has escaped from cultivation in different parts of the State, more commonly to the south. It is a very vigorous grower and is recommended as a mixture with other grasses for hay or pasturage.

Flowers in May and June.

Jefferson and Marion.

DANTHONIA DC.

D. SPICATA (L.) Beauv. Wild Oat Grass.

Found growing sparingly in dry woods and shaded places in various counties of the State. Sheep and cattle do not eat it when they can obtain other grasses.

Flowers in June and July.

Jefferson (Barnes); Fayette (Hessler).

D. COMPRESSA Austin.

Having much the same range as the preceding, though perhaps of less frequent occurrence. It commonly grows in dry woods and is said to furnish good pasturage.

Flowers in July and August.

CAPRIOLA Adans.

C. DACTYLON (L.) Kuntze. Bermuda Grass.

(Cynodon *Dactylon* Pers.)

Sparingly introduced in the southern counties. Cultivated for pasture somewhat, but of doubtful value in our area because of its late appearance in the spring. It is also likely to become troublesome to field crops, its deep, stout root-stocks making it hard to kill.

Flowers from July until September.

SPARTINA Schreb.

S. CYNOSUROIDES (L.) Willd. Fresh-water Cord-grass. Wild Tall Marsh-grass.

Found in the northern counties in considerable abundance in swamps and sluggish streams. It is at times used for hay, being cut when very young.

LaPorte (Barnes); Lake (Hill); Steuben (Bradner).

BOUTELOUA Lag.

B. CURTIPENDULA (Michx.) Torr.

(B. racemosa Lag.)

Very abundant on a hillside in Winona Park, Kosciusko County, in a plat about one rod square, but seen nowhere else. The soil in which it was growing was very dry and sandy. Reported also by Mr. E. Bradner.

Flowers in July and August.

Kosciusko (Chipman); Steuben (Bradner).

ELEUSINE Gaertn.

E. INDICA (L.) Gaertn. Crab-grass. Yard-grass. Wire-grass.

Common throughout the State in dooryards and waste places. The species is of no special value and at times becomes annoying in lawns.

Flowers from June until September.

Steuben (Bradner).

DACTYLOCTENIUM Willd.

D. AEGYPTIUM (L.) Willd. Egyptian Grass.

(Eleusine Aegyptia Pers.)

Found in waste places and cultivated fields in the southern counties. It has become thoroughly naturalized and maintains itself strongly.

Flowers from July until October.

Gibson.

PHRAGMITES Trin.

P. PHRAGMITES (L.) Karst. Reed.

(P. communis Trin.)

In swamps and low wet soils in various parts of the State. More abundant northward, where it is frequently found covering large areas about the low lying lands near the outlets of the small lakes.

Flowers from August through October.

Cass and Marshall (Hessler); Vigo (Blatchley); Steuben (Bradner).

SIEGLINGIA Bernh.

S. SESLERIOIDES (Michx.) Scribn. Tall Red-top.

(Triodia cuprea Jacq.)

Found commonly throughout the State, in dry, sandy fields and waste places. The purple, spreading panicle makes it a very showy grass. If cut early, the species makes good hay, but the fully matured stems are too hard to be relished by stock.

Flowers in August.

Tippecanoe (Cunningham); Vigo (Blatchley.)

ERAGROSTIS Beauv.

E. CAPILLARIS (L.) Nees.

A handsome grass found somewhat commonly in the State, growing in dry soils. It is more likely to be found in sandy soils or upon dry sand banks.

Flowers in August and September.

Hamilton (Wilson); Jefferson.

E. FRANKII Steud.

Found in dry, sandy ground, rather commonly throughout the State. It usually grows in tufts in cultivated fields.

Flowers in August.

Jefferson (Barnes); Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson); Gibson.

E. PILOSA (L.) Beauv.

Of infrequent occurrence in the State, usually growing on gravelly banks along railways.

Flowers in August and September.

Fayette (Hessler); Vigo (Blatchley); Gibson; Steuben (Bradner).

E. PURSHII Schrad.

Quite common throughout the State in dry, sandy soils in waste places or cultivated fields.

Flowers in August and September.

Jefferson (J. M. Coulter); Lake (Hill); Vigo (Blatchley).

E. ERAGROSTIS (L.) Karst.

(*E. minor* Host.)

In waste places and about the edges of cultivated fields. Neither so abundant nor so widely distributed as the species following.

Flowers in July and August.

Tippecanoe (Cunningham); Hamilton and Marion (Wilson) Steuben (Bradner).

E. MAJOR Host.

Commonly found in gardens and along roadsides in late summer. In some localities a persistent and annoying weed. The flattened spikelets bearing numerous lead-colored flowers make it a handsome grass. Unpleasantly scented.

Flowers from July until September.

Tippecanoe (Cunningham); Vigo (Blatchley); Hamilton and Marion (Wilson).

E. PECTINACEA (Michx.) Steud.

Common throughout the State, growing in dry sandy soils. This species includes *E. pectinacea spectabilis* Gray, which is reported as occurring in the central counties of the State.

Flowers in August.

Vigo (Blatchley); Marion.

E. TRICHODES (Nutt.) Nash.

(*E. tenuis* Gray.)

Quite common throughout the State, growing in dry, sandy soil.

Flowers in August and September.

Fayette (Hessler); Marion and Gibson.

E. HYPNOIDES (Lam.) B. S. P.

(*E. reptans* Nees.)

A small, spreading species found growing on sandy and gravelly banks of streams and on bars. Of frequent occurrence.

Flowers in our area in July and August.

Jefferson (Barnes); Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

EATONIA Raf.**E. OBTUSATA (Michx.) Gray.**

Reported only from the southern part of the State, where it is found in dry, shaded places. It furnishes but a small amount of pasturage because of its sparsely growing habit.

Flowers in June and July.

E. PENNSYLVANICA (DC.) A. Gray.

Commonly found throughout the State in open woods or upon shaded hillsides in moist soils. Readily eaten by cattle, but not suitable for pasture on account of its thin growth habit.

Flowers in June and July.

Fayette (Hessler); Vigo (Blatchley); Gibson.

KOELERIA Pers.**K. CRISTATA (L.) Pers.**

Quite generally distributed throughout the State, but not generally recognized. Found on high, dry lands, growing in tufts.

Flowers from June through August.

Laporte (Barnes); Gibson.

MELICA L.

M. DIFFUSA Pursh.

In open places in dry or moist soils. Reported only from northern part of State, but probably of general occurrence.

Flowers in May and June.

Tippecanoe (Cunningham).

M. MUTICA Walt.

Found in rich soils in shaded places, where it grows in tufts. It is reported only from the southern counties, but doubtless occurs elsewhere.

Flowers in June and July.

KORYCARPUS Zea.

K. DIANDRUS (Michx.) Kuntze.

(*Diarrhena Americana* Beauv.)

Found in rich soils in shaded places in the counties bordering the Ohio River and the lower Wabash. "It would doubtless prove valuable for hay if a thick stand could be secured" (Troop).

Flowers in August and September.

Jefferson (Young).

UNIOLA L.

U. LATIFOLIA Michx.

A handsome grass, two or three feet in height, growing in moist, rich soils. So far, reported only from the southern counties.

Flowers in August.

Jefferson (Barnes).

DACTYLIS L.

D. GLOMERATA L. Orchard Grass.

Well distributed throughout the State, growing at the borders of fields, by roadsides and in yards. "It is considered by those who have used it as one of the most valuable of all grasses. Many farmers who have tried it prefer it to timothy for mixing with clover, as it ripens with the clover, while timothy ripens later. As a pasture grass it is hard to excel." (Troop.)

Flowers in June and July.

Tippecanoe (Cunningham); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

POA L.

P. ANNUA L. Low Spear-grass.

Found throughout the State, especially by yards and roadsides. Cattle and sheep are very fond of it green, but its small size, three to six inches in height, makes it valueless for hay.

Commences to blossom in May and continues through the summer. Vigo (Blatchley); Lake (Hill); Marion, Steuben (Bradner).

P. COMPRESSA L. Wire-grass.

Found throughout the State, growing in old pastures and waste places. "It is considered very nutritious, but does not yield enough to make it pay as a hay crop." (Troop.)

Flowers in June and July.

St. Joseph (Barnes); Fayette (Hessler); Jefferson and Marion; Steuben (Bradner).

P. PRATENSIS L. Kentucky Blue-grass. June-grass.

A very valuable grass, found in every part of the State. Grows in open or shaded places, being most luxuriant in rich, moist soils. Largely cultivated for hay and pasture, and also frequently used for lawns.

Flowers in May and June.

Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. TRIVIALIS L. Rough Meadow-grass.

"A species resembling *P. pratensis*, except that the leaves are more or less rough and the panicle longer and branches more distant. Found abundantly in moist meadows." (Troop.)

Flowers in June and July.

Floyd and Marion.

P. FLAVA L. Fowl Meadow-grass. False Red-top.

(*P. serotina* Ehrh.)

Commonly found throughout the State, always growing in moist, rich soil. It is a valuable grass for hay, but its habit of growing in tufts makes it necessary to mix it with some other species if the best results are secured.

Flowers in July and August.

Vigo (Blatchley); Steuben (Bradner).

P. DEBILIS Torr.

"Found sparingly in dry woods in Tippecanoe County, flowering in May." (Troop.)

Steuben (Bradner).

P. SYLVESTRIS Gray.

In thickets and meadows in many parts of the State. Of no great value for hay or pasture.

Flowers in June and July.

Jefferson (Barnes); Fayette (Hessler).

P. ALSODES Gray.

Reported only from the southeastern counties, where it is found growing in thickets and woods.

Flowers in May and June.

P. BREVIFOLIA Muhl.

Found in dry, rocky woods in the counties bordering the Ohio River.

Flowers in April and May.

Floyd (Clapp).

PANICULARIA Fabr.

P. CANADENSIS (Michx.) Kuntze. Rattlesnake Grass.

(*Glyceria Canadensis* Trin.)

Growing in roadside ditches and in marshy places. An ornamental form, largely used in bouquets, the panicles in some cases being dyed in bright colors.

Flowers in July and August.

Gibson; Steuben (Bradner).

P. OBTUSA (Muhl.) Kuntze. Blunt Manna-grass.

(*Glyceria obtusa* Trin.)

Reported only from the southern counties, where it grows in marshes and low, wet grounds.

Flowers in July and August.

P. ELONGATA (Torr.) Kuntze. Long Manna-grass.

(*Glyceria elongata* Trin.)

Reported from the northern counties, growing in rich, wet woods

Flowers in July and August.

Clark.

P. NERVATA (Willd.) Kuntze.

(*Glyceria nervata* Trin.)

Found throughout the State, growing about the margins of ponds and in low, moist grounds. A nutritious grass which may be profitably mixed with other species in wet grounds.

Flowers from June until September.

Jefferson (Barnes); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

P. AMERICANA (Torr.) MacM. Reed Meadow-grass.

(*Glyceria grandis* S. Wats.)

Common throughout the State in very wet places and in shallow, stagnant water.

Flowers from June until August.

P. PALLIDA (Torr.) Kuntze. Pale Manna-grass.

(*Glyceria pallida* Trin.)

Found in shallow water in various parts of the State; more abundant in the northern counties.

Flowers in July and August.

Jefferson.

P. FLUITANS (L.) Kuntze. Floating Manna-grass.

(*Glyceria fluitans* R. Br.)

Found in shallow waters and on the low margins of sluggish streams. The species is abundant, but too coarse for hay.

Flowers in July and August.

Jefferson and Gibson; Steuben (Bradner).

FESTUCA L.

F. OCTOFLORA Walt. Slender Fescue-grass.

(*F. tenella* Willd.)

Reported only from southern counties, growing in dry, sandy soils.

Flowers in June and July.

Jefferson (Barnes).

F. OVINA L. Sheep's Fescue-grass.

In fields and waste places in the northern part of the State.

Flowering season from June until July.

Lake (Hill).

F. ELATIOR L. Tall Fescue-grass.

Widely distributed in the State, growing in cultivated fields, in waste places and by roadsides. Cultivated to some extent, giving a large quantity of hay.

Flowers in July and August.

Gibson.

F. NUTANS Willd. Nodding Fescue-grass.

Found in dry, shaded places, in various parts of the State, chiefly to the southward. Of little, if any, value for hay or pasture.

Flowers in June and July.

Fayette (Hessler); Vigo (Blatchley); Jefferson and Gibson.

BROMUS L.

B. CILIATUS L. Wood Chess.

Fairly common throughout the State, growing in woods and thickets in moist, sandy soils. A very variable species.

Flowers in July and August.

Laporte (Barnes); Vigo (Blatchley); Steuben (Bradner).

B. KALMII Gray. Wild Chess.

Common in most parts of the State, growing in dry soil in shaded places.

Flowers in July and August.

Gibson.

B. SECALINUS L. Cheat. Chess.

In fields and waste places in every part of the State. Very often a pernicious weed in grain fields. This is the grass that at one time was believed by many grain growers to come from wheat, a belief that has not yet wholly died out.

Flowers in June and July.

Vigo (Blatchley); Hamilton and Marion; Steuben (Bradner).

B. RACEMOSUS L. Upright Chess.

Found in situation similar to the preceding, for which it is frequently mistaken. It is also found growing sparsely along the banks of streams.

Flowers in June and July.

Vigo (Blatchley); Jefferson and Gibson.

LOLIUM L.

L. PERENNE L. Rye-grass.

Escaped from cultivation and found sparingly in various counties of the State. It grows in meadows and pastures, but most abundantly on the borders of cultivated fields. A satisfactory grass for mixed hay or pasture.

Flowers in June and July.

Vigo (Blatchley).

AGROPYRON J. Gaertn.

A. REPENS (L.) Beauv. Couch or Quack Grass.

Found throughout the State, usually being very abundant in its stations. A valuable grass for permanent pasture or meadow. "It spreads very rapidly by means of underground rootstalks, which throw out roots at every joint, and when these are broken up by the

plow or harrow, form separate plants. Hence when fields infested by it are wanted for crops it becomes very troublesome." (Troop.)

Flowers from June through August.

Vigo (Blatchley); Marion; Steuben (Bradner).

A. VIOLACEUM (Hörnem.) Vasey. Purplish Wheat Grass.

Reported from Lake County, growing sparingly in dry sandy soil.

Flowers in June.

Lake (Hill).

HORDEUM L.

H. NODOSUM L. Meadow Barley.

(*H. pratense* Huds.)

Found along the lower Wabash and in meadows and waste places in the southern counties. When young it is eaten by stock, but is worthless for forage when mature because of its long barbed awns.

Flowers in June and July.

Gibson; Knox (Spillman).

H. JUBATUM L. Wild Barley. Squirrel-tail Grass.

Found sparingly on sandy or gravelly land in various parts of the State. Of no value in our range.

Flowers in July and August.

Hamilton and Marion (Wilson).

ELYMUS L.

E. STRIATUS Willd. Slender Wild Rye.

A common form growing in woods and on banks in many counties of the State. Of no especial value.

Flowers in June and July.

Jefferson (Young); Fayette (Hessler); Hamilton and Marion (Wilson); Gibson.

E. VIRGINICUS L. Wild Rye.

Common throughout the State, occurring most plentifully in moist, sandy soils in shaded places. While the species has some value farther south, it is practically worthless in our area.

Flowers in July and August.

Vigo (Blatchley); Steuben (Bradner).

E. CANADENSIS L.

Similar to the preceding and found in many counties in fair abundance. It grows on the banks of streams and railways in moist, sandy soil.

Flowers in July and August.

Tippecanoe (Cunningham); Vigo (Blatchley); Steuben (Bradner).

HYSTRIX Moench.

H. HYSTRIX (L.) Millsp. Hedge-hog Grass.

(Asprella Hystrix Willd.)

A coarse grass found quite abundantly in moist, rocky woods. Easily distinguished from *Elymus* by its very loose spike.

Flowers from June until in August.

Hamilton and Marion (Wilson); Steuben (Bradner).

ARUNDINARIA Michx.

A. TECTA (Walt.) Muhl. Small Can.

(A. macrosperma suffruticosa Munro.)

"Found in swamps in the southwestern counties, growing from two to twenty-five feet high and with a stem diameter of from one to three inches. The leaves furnish an abundant food supply for cattle." (Troop.)

Flowers in May and June.

CYPERACEÆ. Sedge Family.

CYPERUS L.

C. FLAVESCENS L. Yellow Cyperus.

In low grounds or marshes. Reported only from the southern counties, but probably of more general distribution.

Flowers August and September.

Jefferson.

C. DIANDRUS Torr. Low Cyperus.

Common throughout the State in marshy places and in low, wet, sandy soil.

Flowers from August through October.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

C. RIVULARIS Kunth.

In wet soils about the margins of lakes and along the shores of rather sluggish streams. Reported only from the northern part of the State, though doubtless of wider distribution. It is probably not separated from *C. diandrus*, which it closely resembles.

Flowers in August and September.

Round Lake (Deam).

C. INFLEXUS Muhl. Awned Cyperus.

Reported only from the southern part of the State, as growing sparsely in wet, sandy soils.

Flowers from July through September.

Jefferson and Allen.

C. SCHWEINITZII Torr.

Found along sluggish streams and about the shores of lakes and ponds, in sandy soil. Reported only from the northern counties, but doubtless occurring in favorable situations throughout the State.

Flowers from early August through September.

Laporte (Barnes).

C. ESCULENTUS L. Yellow Nut-grass.

Reported from the southern counties as growing in open places in moist soils. Usually abundant in the stations in which it occurs.

Flowers in August and September.

Jefferson (Barnes).

C. ERYTHORRHIZOS Muhl. Red-rooted Cyperus.

Throughout the State, along streams and upon the margins of lakes and ponds in wet soils.

Flowers in August and September.

Hamilton (Wilson); Putnam (MacDougal); Steuben (Bradner).

C. SPECIOSUS Vahl.

Reported from southern counties only. Found in marshes, or in low, wet sandy soils. Not frequent.

Flowers from July until late in September.

Vigo (Blatchley); Jefferson (Barnes).

C. ENGELMANNI Steud.

About the margins of lakes in wet soils, usually sandy loams, in the northern counties.

Flowers from August through October.

Shriner Lake (Deam); Lake (Hill).

C. STRIGOSUS L. Straw-colored Cyperus.

This species is of general occurrence throughout the State and is abundant in all stations. Found growing in moist soils in open places, being especially abundant in marshes and along streams.

Flowers in August and September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

C. OVULARIS (Michx.) Torr. Globose Cyperus.

Reported from various counties of the State, as of sparing occurrence. The species grows in dry soils, usually on high ground.

Flowers in July and August.

Jefferson, Gibson, and Lake.

C. FILICULMIS Vahl. Slender Cyperus.

Reported only from the northern counties, but probably of general distribution in favorable situations. Found growing in dry, upland soils.

Flowers from June through August.

Lake and Laporte.

KYLLINGA Rottb.**K. PUMILA** Michx.

In the southern counties of the State, growing in low, sandy soils, either in waste places or cultivated fields. Of frequent occurrence.

Flowers in August and September.

Jefferson (Barnes); Vigo (Blatchley).

DULICHIMUM L. C. Richard.**D. ARUNDINACEUM** (L.) Britton.

(*D. spathaceum* Pers.)

Throughout the State, in wet places. Found most abundantly on the borders of marshes and along streams.

Flowers from July through September.

Laporte (Barnes); Round Lake (Deam); Vigo (Blatchley); Steuben (Bradner).

ELEOCHARIS R. Br.**E. INTERSTINCTA** (Vahl.) R. and S. Knotted Spike-rush.

Found in shallow waters in the smaller inland lakes and along the margins of sluggish streams. Reported only from northern counties.

Flowers from July until in September.

Round Lake (Deam).

E. MUTATA (L.) R. and S. Quadrangular. Spike-rush.

(*E. quadrangulata* R. Br.)

Reported from the northern counties, where it is found growing in ponds and shallow lakes, and occasionally in sluggish streams.

Flowers from July through September.

Round Lake (Deam); Steuben (Bradner); Kosciusko (Chipman); Lake (Hill).

E. OLIVACEA Torr. Bright Green Spike-rush.

In marshes in the southwestern part of the State. The species in its mass distribution is near the coast, and its occurrence in our area is exceptional.

Flowers in August and September.

Gibson (Schneck); Lake (Hill).

E. CAPITATA (L.) R. Br.

In wet soils in the southern counties of the State. Abundant in favorable situations.

Flowers in our area in July and August.

Vigo (Blatchley); Lake (Hill).

E. OVATA (Roth.) R. and S.

Found throughout the State in wet soil, usually somewhat sandy or clayey. Very abundant and very variable. It is also often found in shallow water, at the margins of ponds and ditches.

Flowers from June through September.

Tippecanoe (Cunningham); Kosciusko (Chipman); Jefferson (Barnes); Noble (Van Gorder); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

E. ENGELMANNI Steud.

Found somewhat sparingly in various counties of the State, grows in wet soil and occasionally found in shallow water.

Flowers in July and August.

Putnam (MacDougal).

E. PALUSTRIS (L.) R. and S. Creeping Spike-rush.

Found in marshes and the shallow waters of ponds and lakes in the northern counties. Plentiful in stations in which it is found.

Flowers in August and September.

Laporte (Barnes).

E. ACICULARIS (L.) R. and S. Needle Spike-rush.

In low, muddy places about ponds and streams. Well distributed, but never abundant.

Flowers in July and August.

Laporte (Barnes); Vigo (Blatchley); Steuben (Bradner).

E. MELANOCARPA Torr.

In wet sands in or near the southern shores of Lake Michigan. Not found far removed from the lake.

Flowers in July and August.

Lake and Laporte (Hill).

E. TENUIS (Willd.) Schultes. Slender Spike-rush.

Not uncommon, especially in the southern counties. Found on moist banks and in damp open places.

Flowers from May until August.

Vigo (Blatchley).

E. ROSTELLATA Torr. Beaked Spike-rush.

Found in the swamp regions of the southwestern counties and also in low, wet meadows.

Flowers in August and September.

STENOPHYLLUS Raf.**S. CAPILLARIS** (L.) Britton.

(*Fimbristylis capillaris* Gray.)

Throughout the State, but not abundant. It is usually found on dry, sandy banks or on the borders of cultivated areas.

Flowers in July and August.

Vigo (Blatchley).

FIMBRISTYLIS Vahl.**F. CASTANEA** (Michx.) Vahl. Marsh Fimbristylis.

(*F. spadicea castanea* Gray.)

Occurs in Lake County in wet soil.

Flowering season from July to September.

Lake (Hill).

F. AUTUMNALIS (L.) R. and S.

In low, moist places, usually in sandy soils. Found in most parts of the State, but nowhere abundant.

Flowers from June through September.

Jefferson (J. M. Coulter); Vigo (Blatchley).

SCIRPUS L.**S. SUBTERMINALIS** Torr. Water Club-rush.

In swamps and shallow waters of lakes and ponds in the extreme northern counties.

Flowers in July and August.

Lake (Hill).

S. DEBILIS Pursh. Weak-stemmed Club-rush.

In wet soils about marshes and the borders of lakes and streams in the northern counties.

Flowers in July and August.

Lake (Hill).

S. SMITHII Gray.

In muddy places at the borders of lakes and sluggish streams.
Reported only from the northern counties.

Flowers from July until in September.

Laporte.

S. AMERICANUS Pers. Chair-maker's Rush.

(*S. pungens* Vahl)

In all parts of the State in the shallower waters of ponds and lakes and along their borders.

Flowers from June until late in September.

Noble (Van Gorder); Shriner Lake (Deam); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

S. TORREYI Olney.

Found occasionally in swamps in the northern part of the State.
Not abundant in any of its stations.

Flowers from July until September.

Lake and Porter (Hill).

S. LACUSTRIS L. Great Bulrush. Mat Rush.

Throughout the State in ponds and swamps and sluggish streams.
Very abundant northward in the regions of the Kankakee marshes and of the shallower inland lakes.

Flowers from June until September.

Tippecanoe (Cunningham); Noble (Van Gorder); Vermillion (Wright); Putnam (MacDougal); Shriner Lake (Deam); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. FLUVIATILIS (Torr.) Gray. River Bulrush.

Found in various parts of the State in the shallow waters along the margins of streams and ponds. Usually abundant in its stations.

Flowers from June until late in September.

Vigo (Blatchley).

S. ATROVIRENS Muhl. Dark-green Bulrush.

Throughout the State in swamps and low, wet meadows and prairies. Abundant wherever found.

Flowers from June until late in September.

Tippecanoe (Cunningham); Noble (Van Gorder); Shriner Lake (Deam); Vigo (Blatchley); Hamilton and Marion (Wilson).

S. POLYPHYLLUS Vahl. Leafy Bulrush.

In the swamps of the southwestern counties; also in wet woods and meadows in the majority of the southern counties.

Flowers from July until September.

S. LINEATUS Michx. Reddish Bulrush.

On the margins of lakes in low, wet ground and in wet, open places. Found throughout the State.

Flowers from June until in September.

Decatur (Ballard); Shriner Lake (Deam).

S. CYPERINUS (L.) Kunth. Wool-grass.

(*Eriophorum cyperinum* L.)

Found in many parts of the State in swamps and the margins of lakes and sluggish streams. Apparently more abundant in the northern part of the State.

Flowers in August and September.

Tippecanoe (Cunningham); Noble (Van Gorder); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

ERIOPHORUM L.**E. VAGINATUM** L. Sheathed Cotton-grass.

Reported only from the northern part of the State as growing in swamps. The species is admitted somewhat doubtfully, our area being well south of the general distribution of the form.

Flowering season, June and July.

Steuben (Bradner).

E. POLYSTACHYON L. Tall Cotton-grass.

Occurring in very wet grounds in Putnam County, upon the authority of Dr. MacDougal. So far as has come to my knowledge, the only record for the State.

Flowers from June through August.

Putnam (MacDougal).

E. GRACILE Koch. Slender Cotton-grass.

In bogs in the northern counties.

Flowering season from June until September.

Lake (Hill); Steuben (Bradner).

E. VIRGINICUM L.

In marshes and low, wet meadows in many counties of the State, but not abundant in any of its stations.

Flowers from June until late in September.

Laporte (Barnes); Noble (Van Gorder); Vigo (Blatchley).

HEMICARPHA Nees and Arn.

H. MICRANTHA (Vahl.) Britton.

(H. subsquarrosa Nees.)

In moist, sandy places about the southern shores of Lake Michigan.
Not reported farther south.

Flowering in July and August.

Porter (Hill).

RYNCHOSPORA Vahl.

R. CORNICULATA (Lam.) Gray. Horned-rush.

In marshes and low, wet open places in the southern counties of the State. Sparingly found.

Flowers in July and August.

Floyd (Clapp).

R. ALBA (L.) Vahl. White Beaked-rush.

In marshes and swamps; reported only from the northern counties of the State.

Flowers in June and August.

Noble (Barnes); Steuben (Bradner).

R. CAPILLACEA LAEVISETA E. J. Hill.

Reported only from the northern counties in bogs and low, wet grounds.

Flowers in July and August.

Lake (Hill). Vahl.

R. GLOMERATA (L.) Vahl.

In moist soils in the northern counties of the State. Of frequent occurrence in the regions in which it is found.

Flowers from July through September.

Laporte (Barnes); Round Lake (Deam).

R. CYMOSA Ell.

In wet soils and about the margins of lakes, in the northern counties of the State.

Flowers from June through August.

Lake (Hill).

CLADIUM P. Br.

C. MARISCOIDES (Muhl.) Torr. Twig-rush.

Reported from various counties, growing in marshes and low, wet places. The recorded stations are from the northern counties, although it is probably to be found throughout the State.

Flowers in July and August.

Noble (Van Gorder); Shriner Lake (Deam).

SCLERIA Berg.

S. TRIGLOMERATA Michx. Tall Nut-grass.

In the northern part of the State, usually found in very wet, shaded places.

Flowers in July and August.

Lake.

S. VERTICILLATA Muhl. Low Nut-grass.

Found in moist meadows and prairies in various counties of the State. Apparently chiefly southern in its distribution in our area. Plant quite fragrant in drying.

Flowers from July through September.

Lake.

CAREX L.

C. INTUMESCENS Rudge. Bladder Sedge.

Commonly found throughout the State, growing in marshy places and wet woods.

Flowers from early in May until October.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal).

C. ASA-GRAYI Bailey.

(*C. Grayi* Carey.)

Found quite abundantly throughout the State in marshes and wet, open places. More plentiful in the southern counties.

Flowers from June until October.

Daviess (Clements); Noble (Van Gorder); Knox (Spillman); Vigo (Blatchley).

C. LUPULINA Muhl. Hop Sedge.

Abundant in all parts of the State, growing in low, wet woods and in bogs.

Flowers from June until September.

Jefferson (J. M. Coulter); Noble (Van Gorder); Tippecanoe (Cunningham); Floyd (Clapp); Hamilton (Wilson); Knox (Spillman); Vigo (Blatchley); Porter and Laporte.

C. LUPULIFORMIS Sartwell.

Reported only from the northern part of the State, where it is found sparingly in wet, low grounds about lakes and in rather cold bogs.

Flowers from June through August.

Shriner Lake (Deam).

C. UTRICULATA Boott. Bottle Sedge.

Reported from central and northern counties of the State as occurring in swamps and shaded lowlands.

Flowers from June through September.

Noble (Van Gorder); Hamilton (Wilson).

C. MONILE Tuckerm. Necklace Sedge.

Reported only from the swamp regions of the southwestern counties. The species is probably to be found throughout the State.

Flowers in June and July.

Gibson.

C. TUCKERMANI Dewey.

In marshes and low wet meadows in the southern counties. This species, originally sparingly found, has not been reported since 1887.

Flowers in June and July.

Floyd.

C. RETRORSA Schwein.

Reported from the swamp regions of the southwestern counties as occurring plentifully in many stations. The species probably occurs throughout the State in favorable locations.

Flowers in July and August.

Gibson.

C. LURIDA Wahl.

Widely distributed and abundant, growing in low, wet meadows or in marshes.

Flowers from June through September.

Noble (Van Gorder); Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner).

C. HYSTRICINA Muhl. Porcupine Sedge.

In low grounds in the northern counties in very wet soils, usually in open places.

Flowers in July and August.

Lake (Hill); Steuben (Bradner).

C. PSEUDO-CYPERUS L.

In cold bogs in the northern part of the State. Occurs sparingly in a few stations.

Flowers in June and July.

Noble (Van Gorder).

C. COMOSA Boott. Bristly Sedge.

(*C. Pseudo-Cyperus Americana* Hochst.).

Found throughout the State in low, wet grounds along streams and about the margins of ponds and lakes.

Flowers from May until the early frosts.

Shriner Lake (Deam); Floyd (Clapp); Noble (Van Gorder); Steuben (Bradner); Lake (Hill).

C. FRANKII Kunth. Frank's Sedge.

(*C. stenolepis* Torr.)

Found throughout the State in fair abundance, growing in low, wet meadows.

Flowers from June until September.

Tippecanoe (Cunningham); Jefferson (Barnes); Noble (Van Gorder); Marion.

C. SQUARROSA L.

Found widely distributed through the State and abundant in the stations in which it occurs. Grows in wet soils, usually in open places.

Flowers from June until October.

Floyd (Clapp); Jefferson (Barnes); Hamilton (Wilson); Vigo (Blatchley); Porter (Hill).

C. RIPARIA Curtis. Riverbank Sedge.

Exceptionally found in swamps in the northern counties of the State.

Flowers from May until September.

Steuben (Bradner); Lake (Hill).

C. SHORTIANA Dewey.

Reported from many stations, chiefly in the southern part of the State, growing in wet soils in either open or shaded places.

Flowers from May through August.

Daviess (Clements); Jefferson (Barnes); Floyd (Clapp); Vigo (Blatchley).

C. LANUGINOSA Michx. Woolly Sedge.

Reported only from the southern counties of the State as occurring sparingly in wet meadows.

Flowers in June and July.

Jefferson.

C. FILIFORMIS L. Slender Sedge.

Reported from the extreme northern counties as of sparing occurrence in swamps and in low, bottom lands about lakes.

Flowers in June and July.

Lake (Hill).

C. FUSCA All. Brown Sedge.

(*C. Buxbaumii* Wahl.)

In bogs and wet places.

Flowering season from May to July.

Lake.

C. STRICTA Lam. Tussock Sedge.

Sparingly found in marshes and low, wet meadows. Probably not separated from *C. filiformis* in many cases.

Flowers from July through September.

Putnam (MacDougal).

C. TORTA Boott. Twisted Sedge.

Occasionally found in wet thickets and woods, but nowhere abundant.

Flowers in June and July.

Putnam (MacDougal).

C. CRINITA Lam. Fringed Sedge.

Found throughout the State in wet woods and thickets. Apparently occurring in greater abundance in the southern counties.

Flowers from May until September.

Daviess (Clements); Putnam (MacDougal); Knox (Spillman); Vigo (Blatchley); Steuben (Bradner).

C. *VIRESCENS* Muhl. Downy Green Sedge.

Reported only from the southern counties, where it grows in dry, clay or sand soils in shaded places.

Flowers from May until July.

Jefferson and Porter.

C. *TRICEPS* Michx. Hirsute Sedge.

Found throughout the State, growing in moist soils, either in the shade or open. Nowhere abundant.

Flowers from April until August.

C. *GRACILLIMA* Schwein.

Reported only from the southern part of the State, though probably of more general distribution. The species grows in moist, open woods and meadows.

Flowers from May through July.

Jefferson ; Lake (Hill).

C. *FORMOSA* Dewey. Handsome Sedge.

In the central and northern counties of the State, growing in dry soil in shaded places.

Flowers in June and July.

Putnam (MacDougal).

C. *DAVISII* Schwein. and Torr.

Reported from the northern part of the State as occurring in moist woods. Not abundant.

Flowers in June and July.

Steuben (Bradner).

C. *ARCTATA* Boott. Drooping Wood Sedge.

Found in very sparing numbers in dry soil in shaded places. Reported only from the northern counties, but probably occurring throughout the State.

Flowers in May and June.

Steuben (Bradner).

C. *TENUIS* Rudge.

(*C. debilis Rudgei* Bailey.)

Not uncommon throughout the State, growing in shaded places in rather dry soil.

Flowers from May through August.

Jefferson ; Steuben (Bradner).

C. *GRISEA* Wahl. Gray Sedge.

Reported only from the southern counties, but doubtless occurring throughout our area. The species grows in shaded places in dry soil. Flowers from May until August.
Jefferson (Barnes).

C. *GRANULARIS* Muhl. Meadow Sedge.

Found sparingly throughout the State, in moist meadows and on the borders of wet prairies. Flowers from May through July.
Putnam (MacDougal); Vigo (Blatchley); Lake (Hill).

C. *CRAWEI* Dewey.

In damp, open places in the northern counties. Not abundant in any of its stations. Flowers from May until July.
Lake (Hill).

C. *FLAVA* L.

In swamps and wet prairies in the northern part of the State. Probably of more general distribution than the reports indicate. Flowers from July through September.
Noble (Barnes).

C. *VIRIDULA* Michx.

This extreme northern form is reported as occurring in Lake County, upon the authority of Rev. E. J. Hill. Probably not to be found in any other county except, perhaps, Porter. Flowers in July and August.

C. *CONOIDEA* Schk. Field Sedge.

Throughout the central and northern counties, growing in meadows and abandoned fields in moist soils. Flowers in May and June.
Putnam (MacDougal).

C. *OLIGOCARPA* Schk.

Found sparingly in all parts of the State, growing in dry soils in shaded places. Flowers from May through July.
Putnam (MacDougal).

C. HITCHCOCKIANA Dewey.

In the central and northern counties, growing in woods and thickets in moist soils. Not abundant in any of its reported stations.

Flowers from May until August.

Noble (Van Gorder); Putnam (MacDougal).

C. TETANICA Schk. Wood's Sedge.

This northern and eastern form has obtained a place in our flora in the northwestern counties.

Added to the flora by Rev. E. J. Hill.

Flowers in June and July.

Lake (Hill).

C. LAXIFLORA Lam. Loose-flowered Sedge.

Throughout the State in open woods and borders of fields. Common in all of its stations.

Flowers from May until August.

Tippecanoe (Cunningham); Floyd (Clapp); Noble (Van Gorder); Vigo (Blatchley); Steuben (Bradner).

C. LAXIFLORA BLANDA (Dewey) Boot.

Reported only from the extreme southern and northern counties, but doubtless occurring throughout the State. The form grows in meadows and thickets in dry or moist soils.

Flowers from May through July.

Gibson and Lake.

C. LAXIFLORA PATULIFOLIA (Dewey) Carey.

Sparingly found in various counties of the State, associated with the two forms just preceding, from which it is probably not distinguished in many cases.

Flowers from May through July.

Jefferson; Putnam (MacDougal).

C. STYLOFLEXA Buckley. Bent Sedge.

(*C. laxiflora styloflexa* Boott.)

Reported only from the southern counties and probably not extending far northward in the State.

Flowers in May and June.

Jefferson.

C. DIGITALIS Willd.

In woods and thickets in the central and northern counties of the State. Frequently met, but nowhere abundant.

Flowers in June and July.

Tippecanoe (Cunningham).

C. CAREYANA Torr.

In rich woods in northern counties.

Flowering season from May until June.

Laporte.

C. ALBURSINA Sheldon. White Bear Sedge.

(*C. laxiflora latifolia* Boott.)

Found sparingly in the central and northern counties, growing in woods and thickets in moist soil.

Flowers in June and August.

Putnam (MacDougal); Laporte.

C. PLANTAGINEA Lam. Plantain-leaved Sedge.

Commonly found throughout the State in moist woods and thickets.

Flowers in June and July.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Steuben (Bradner); Laporte.

C. PLATYPHYLLA Carey. Broad-leaved Sedge.

Not uncommon in various parts of the State. Probably sparingly found throughout our area, in woods and thickets, in moist soils.

Flowers in May and June.

Hamilton and Marion (Wilson); Steuben (Bradner).

C. AUREA Nutt.

Reported only from the extreme northern counties, growing in wet, low grounds on the borders of swamps and sluggish streams.

Flowers in June and July.

Lake.

C. SETIFOLIA (Dewey) Britton. Bristle-leaved Sedge.

(*C. eburnea* Boott.)

Found in various parts of the State, in dry, sandy or rocky soils and upon limestone rocks.

Flowers in May and June.

Jefferson and Lake.

C. RICHARDSONI R. Br.

Apparently confined to the northern counties, where it grows in dry, sandy soil. Not abundant.

Flowers in June and July.

Lake (Hill).

C. PEDUNCULATA Muhl. Long-stalked Sedge.

The species is northern in its mass distribution, and its Indiana stations mark, perhaps, the southern limit of its range. Specimens I have examined leave no room for doubt as to its occurrence in our area. Found growing in dry, sandy soil. Confined to the northern counties.

Flowers in May and June.

Steuben (Bradner); Noble (Van Gorder).

C. PENNSYLVANICA Lam.

An early flowering form found sparingly in the State in dry soils.

Flowers in May and June.

Putnam (MacDougal); Steuben (Bradner).

C. VARIA Muhl.

Throughout the State in dry soils, but not abundant in any of its stations.

Flowers from May through July.

Jefferson and Lake.

C. UMBELLATA Schk.

Reported only from the northern part of the State as occasionally found in dry, sandy soils. Added to the flora by Rev. E. J. Hill.

Flowers from May through July.

Lake (Hill).

C. PUBESCENS Muhl. Pubescent Sedge.

Found throughout the central and northern counties in shaded places. It affects dry soil, but is not abundant in any of its stations.

Flowers in June and July.

Putnam (MacDougal); Hamilton (Wilson); Steuben (Bradner).

C. WILLDENOVII Schk.

Throughout the State in dry soils of thickets and woods. While not abundant, it is of fairly frequent occurrence.

Flowers in April and May.

Jefferson.

C. JAMESII Schwein.

Common in the central and northern counties, growing in dry soil in upland woods and thickets.

Flowers in April and May.

Tippecanoe (Cunningham); Noble (Van Gorder); Putnam (MacDougal).

C. LEPTALEA Wahl.

(*C. polytrichoides* Willd.)

Reported only from the northern counties as of occasional occurrence in bogs and swamps.

Flowers in June and July.

Noble (Van Gorder).

C. CONJUNCTA Boott. Soft Fox Sedge.

Found sparingly in the central and southern counties, growing in swampy woods and meadows.

Flowers from June until August.

Putnam (MacDougal); Vigo (Blatchley).

C. STIPATA Muhl. Awl-fruited Sedge.

Reported from the southern part of the State as common in low, wet grounds, usually in open places.

Flowers from May through July.

Vigo (Blatchley).

C. CRUS-CORVI Shuttlw. Raven's-foot Sedge.

Throughout the State in considerable abundance, growing in swamps or in very wet meadows. In the latter situation much reduced in size.

Flowers from May until July.

Tippecanoe (Cunningham).

C. TERETIUSCULA Gooden.

Not uncommon in the southern counties, growing in swamps and wet meadows. Not reported north of Putnam County.

Flowers in May and June.

Daviess (Clements); Lake (Hill).

C. ALOPECOIDEA Tuckerm. Foxtail Sedge.

A northern form reported from a few localities in the northern part of the State. Not of general occurrence.

Flowers in June and July.

Lake.

C. VULPINOIDEA Michx.

Common throughout the State in low, grassy places, usually in rather dry soils.

Flowers from May until July.

Tippecanoe (Cunningham); Putnam (MacDougal); Vigo (Blatchley).

C. SARTWELLII Dewey.

In the northern counties in swamps and low, wet grounds. Not especially abundant in any of its stations.

Flowers from May through July.

Lake.

C. TENELLA Schk. Soft-leaved Sedge.

In the central and northern counties in swamps and low, wet soils. Plentiful locally, but not of wide distribution.

Flowers in June and July.

Putnam (MacDougal).

C. ROSEA Schk. Stellate Sedge.

Frequently found in various counties of the State, growing in rich, moist soils in shaded positions.

Flowers in May and June.

Jefferson (Barnes); Putnam (MacDougal); Vigo (Blatchley).

C. MURICATA L. Lesser Prickly Sedge.

In the central and eastern counties, growing in open places in rather dry soils. Not frequent.

Flowers in June and July.

Putnam (MacDougal).

C. SPARGANIODES Muhl. Bur-reed Sedge.

Of common occurrence in many counties of the State, growing on borders of marshes and in low, damp woods and thickets.

Flowers from June through August.

Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner).

C. CEPHALOPHORA Muhl.

Quite frequent, especially in the southern counties, growing in dry soils in open places. It often extends into open woods.

Flowers in May and June.

Vigo (Blatchley).

C. MUHLENBERGHII Schk.

Reported only from the northern counties in dry soils of fields and uplands. Probably to be found throughout our area.

Flowers in June and July.

Laporte (Barnes).

C. STERILIS Willd.

(*C. echinata microstachys* Boeckl.)

In the northern counties, growing in moist, usually sandy soils. Locally abundant. An extremely variable species.

Flowers from May through July.

Lake; Steuben* (Bradner).

C. STERILIS CEPHALANTHA Bailey.

(*C. echinata cephalantha* Bailey.)

Of the same range as the preceding, from which it is usually not separated.

Flowers from May through July.

Lake.

C. TRISPERMA Dewey.

In central and northern counties, growing in swamps and wet woods. Nowhere abundant.

Flowers from June through August.

Putnam (MacDougal).

C. BROMOIDES Schk.

In the central and northern counties, growing sparingly in bogs and extremely wet ground.

Flowers in June and July.

Putnam (MacDougal); Laporte.

C. MUSKINGUMENSIS Schwein. Muskingum Sedge.

In moist woods and thickets in the northern part of State.

Flowering season from June until August.

Lake (Hill).

C. TRIBULOIDES Wahl.

Throughout the State, usually found growing in low meadows along ditches. Not infrequent, but nowhere abundant.

Flowers from July through September.

Tippecanoe (Cunningham); Vigo (Blatchley); Jefferson.

C. SCOPARIA Schk.

Throughout the State, growing in low, wet soil. Usually abundant in the stations in which it occurs.

Laporte (Barnes); Vigo (Blatchley); Steuben (Bradner).

C. FOENEA Willd. Hay Sedge.

Reported only from the southern counties, but probably to be found throughout the State. Ordinarily found in dry soils in shaded places.

Flowers in May and June.

Gibson.

C. STRAMINEA Willd. Straw Sedge.

Found throughout the State, growing in dry soil in either open or shaded places. Common, but not abundant.

Flowers in June and July.

Vigo (Blatchley).

C. ALATA Torrey. Broad-winged Sedge.

Found only in the northern counties near the southern shores of Lake Michigan, growing in moist, rather sandy soils. Recognized as a member of the State flora by Rev. E. J. Hill.

Flowers in May and June.

Lake.

ARACEÆ. Arum Family.**ARISÆMA Mart.****A. TRIPHYLLUM (L.) Torr. Jack-in-the-Pulpit. Indian Turnip.**

In all parts of the State, in rich, moist soils in shaded localities.

Flowers from April through July.

Tippecanoe (Cunningham); Daviess (Clements); Fayette (Hessler); Decatur (Ballard); Putnam (MacDougal); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Jefferson (Barnes); Kosciusko (Coulter); Noble (Van Gorder); Cass (Hessler).

A. DRACONTIUM (L.) Schott. Green Dragon. Dragon-root.

Found throughout the State in situations similar to those in which the preceding species occurs, though perhaps more closely confined to moist shades. While of common occurrence, it is nowhere abundant. Easily distinguished from *A. triphyllum* by its many-segmented leaves.

Flowers in May and June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Hamilton and Marion (Wilson); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

PELTANDRA Raf.

P. VIRGINICA (L.) Kunth. Green Arrow-arum.

In many counties of the State, but not abundant in any of its stations. It is found along large ditches, on the margins of ponds and the borders of swamps. Always in very wet soils or in shallow waters.

Flowers in May and June.

Vigo (Blatchley); Cass (Hessler); Steuben (Bradner); Gibson.

CALLA L.

C. PALUSTRIS L. Water Arum.

Reported only from the northern counties, where it is found sparingly in bogs and tamarack swamps.

Flowers in May and June; fruit ripens in August.

Noble (Van Gorder).

SPATHYEMA Raf.

S. FOETIDA (L.) Raf. Skunk Cabbage.

(*Symplocarpus foetidus* Nutt.)

Quite common in all parts of the State, in swamps and rich, wet soils. A species of easy recognition.

Flowers very early, from February through April; fruit ripens in August and September.

Tippecanoe (Cunningham); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner); Franklin (Meyneke); Jefferson (J. M. Coulter); Noble (Van Gorder); Kosciusko (Coulter).

ACORUS L.

A. CALAMUS L. Sweet Flag. Calamus-root.

Of frequent occurrence throughout the State, growing in swamps and along streams, but abundant in none of its stations. More plentiful in the southern counties of the State. The large root stalks furnish the drug calamus.

Flowers in May and June.

Tippecanoe (Cunningham); Fayette (Hessler); Putnam (MacDougal); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Gibson, Cass (Hessler).

LEMNACEÆ. Duckweed Family.

SPIRODELA Schleid.

S. POLYRHIZA (L.) Schleid. Greater Duckweed.

Commonly found throughout the State in streams and shallow lakes. Very abundant in the pools of the low bottom lands about lakes.

No specimens in flower have been sent me, nor have I collected the species in flower.

Tippecanoe (Cunningham); Vermillion (Wright); Putnam (MacDougal); Hamilton and Marion (Wilson); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner); Cass (Hessler).

LEMNA L.

L. TRISULCA L. Ivy-leaved Duckweed. Star Duckweed.

In shallow pools about lakes, in ditches and sluggish streams throughout the State. Frequent, but ordinarily not abundant.

Flowers as early as May in the southern part of the State and continues until in August.

Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner); Kosciusko and Gibson.

L. MINOR L. Lesser Duckweed.

Quite abundant in shallow ponds and lakes and in sluggish streams in all parts of the State. In our area it apparently is most abundant in pools protected from long-continued, direct light.

Flowers from May until September.

Vigo (Blatchley); Noble (Van Gorder); Kosciusko and Tippecanoe.

WOLFFIA Horkel.

W. COLUMBIANA Karst.

Abundant in stagnant pools, about lakes and in shallow ponds throughout the State. This species, as minute alga-like grains, floats just beneath the surface of the water.

Flowers in June and July.

Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner); Kosciusko (Coulter).

W. BRASILIENSIS Wedd.

In similar situations as the preceding, but much less common, and apparently confined to the central and northern counties of the State. This species floats on the surface of the water.

Flowers in June and July.

Hamilton (Wilson).

XYRIDACEÆ. Yellow-eyed Grass Family.

XYRIS L.

X. FLEXUOSA Muhl. Slender Yellow-eyed Grass.

Found in swamps and bogs in the northern counties of the State, and probably occurring sparingly throughout our area. While frequently met, it is abundant in none of its stations.

Flowers from July until September.

Laporte (Barnes); Lake (Hill); Kosciusko (Coulter).

ERIOCAULACEÆ Pipewort Family.

ERIOCAULON L.

E. SEPTANGULARE With. Seven-angled Pipewort.

Found quite commonly in the northern counties in still waters and on muddy banks. When growing in the mud the weak scapes are from one to eight inches long; when submerged they vary in length from four to ten feet.

Flowers from July through October.

Laporte (Hill); Noble (Van Gorder); Steuben (Bradner); Round Lake (Deam).

COMMELINACEÆ. Spiderwort Family.

COMMELINA L.

C. NUDIFLORA L. Creeping Day-flower.

Reported only from the southern counties as growing somewhat commonly along streams. The species probably extends but a short distance northward in the State.

Flowers in July and September.

Gibson and Posey (Schneck).

C. ERECTA L. Slender Day-flower.

In moist soils in the southern counties of the State. Admitted upon the authority of Dr. John M. Coulter. A southern form found only exceptionally in our area.

Flowers in August and September.

Jefferson (J. M. Coulter).

C. VIRGINICA L. Virginia Day-flower.

Throughout the State in moist soils, though found in greater abundance in the southern counties. It seems to affect soils with a considerable admixture of sand.

Flowers from June until September.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Vigo (Blatchley); Lake.

TRADESCANTIA L.

T. VIRGINIANA L. Spiderwort.

Found abundantly in all parts of the State, growing in rich, moist soils, usually in shaded situations. Extremely variable as to size, pubescence, leaf-shape and color of the flower. The differences are so great in some instances as to raise a question as to whether they should not be regarded as distinct species.

Flowers from May until September.

Tippecanoe (Cunningham); Daviess (Clements); Steuben (Bradner); Cass and Fayette (Hessler); Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Jay, Delaware, Randolph and Wayne (Phinney); Dearborn (Collins); Floyd (Clapp); Vermillion (Wright); Knox (Spillman); Decatur (Ballard); Hamilton and Marion (Wilson).

T. PILOSA Lehm.

Found in dry, gravelly banks or in drift soils in various parts of the State. Usually frequent in the stations in which it occurs.

Flowers from June through August.

Vigo (Blatchley); Cass (Hessler).

PONTEDERIACEÆ. Pickerel-weed Family.

PONTEDERIA L.

P. CORDATA L. Pickerel-weed.

Found in all parts of the State, but especially abundant in the lake regions of the northern counties, where it grows in the shallow waters of lake margins.

Flowers from June until October.

Tippecanoe (Cunningham); Laporte (Barnes); White (Hussey); Vigo (Blatchley); Gibson and Posey (Schneck); Noble (Van Gorder); Vermillion (Wright); Putnam (MacDougal); Shriner Lake (Deam); Steuben (Bradner); Kosciusko and Marshall (Coulter).

HETERANTHERA R. and P.

H. RENIFORMIS R. and P. Mud Plantain.

Reported only from the southern counties, growing in shallow waters and in mud. The species probably does not extend far northward in our area.

Flowers in July and August.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck).

H. DUBIA (Jacq.) MacM. Water Star-grass.

(*H. graminea* Vahl.)

Found throughout the State, growing in quiet water and also on muddy banks. The form growing in the mud is much reduced in size. Usually quite abundant in the stations in which it occurs.

Flowers from July through September.

Laporte (Barnes); Putnam (MacDougal); Noble (Van Gorder); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley); Kosciusko (Coulter).

JUNCACEÆ. Rush Family.

JUNCUS L.

J. EFFUSUS L. Common Rush. Bog Rush. Soft Rush.

Found throughout the State growing in swamps and moist places. Abundant in all stations from which it is reported.

Flowers from May until in August.

Jefferson (Barnes); Noble (Van Gorder); Decatur (Ballard); Lake (Hill); Vigo (Blatchley); Steuben (Bradner); Laporte.

J. BALTICUS Willd. Baltic Rush.

Confined to the southern shores of Lake Michigan. Added to the State flora by Rev. E. J. Hill. A northern shore form, probably not extending far inland in our area.

Flowering in July.

Lake (Hill).

J. TENUIS Willd. Slender Rush. Yard Rush.

Abundant throughout the State, growing in dry or moist soils. It is usually more abundant in damp situations.

Flowers from June through August.

Tippecanoe (Cunningham); Jefferson (Barnes); Noble (Van Gorder); Putnam (MacDougal); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

J. GREENEI Oakes and Tuckerm.

Found only in the north, where it occurs sparingly on the southern shores of Lake Michigan. The mass distribution of the species is near the sea coast. Contributed by Rev. E. J. Hill.

Flowers in June.

Lake (Hill).

J. DICHOTOMUS Ell. Forked Rush.

This species is admitted upon the authority of Dr. J. Schneck. I have seen no specimens, but as the collections of Dr. Schneck were passed upon by Dr. Gray, I do not feel justified in excluding the species. The form is of dry soils "near the coast" and its occurrence in our southwestern counties is difficult to understand.

Flowers in June.

Gibson (Schneck).

J. MARGINATUS Rostk. Grass-leaved Rush.

Reported from the southern counties as occurring sparingly in grassy, moist places along ditches and sluggish streams.

Flowering in May and June.

Vigo (Blatchley).

J. PELOCARPUS E. Meyer.

Found in the northern part of the State in moist soils, in either shaded or open places. Not abundant.

Flowers in July.

Laporte (Barnes).

J. RICHARDSONIANUS Schult.

Found in the northern counties growing in sandy soils about bogs and swamps. Recognized as a member of the State flora by Rev. E. J. Hill.

Flowers in June and July.

Lake (Hill).

J. NODOSUS L. Knotted Rush.

Found frequently in the northern counties, less frequently in the southern part of the State. Frequents swamps and moist, gravelly banks.

Flowers in July and August.

Noble (Van Gorder); Gibson (Schneck); Lake (Hill).

J. TORREYI Coville.

(*J. nodosus megacephalus* Torr.)

In swamps and wet, sandy soils in the northern counties of the State. Usually associated with *J. nodosus*, from which it is not always separated.

Flowers in July and August.

Tippecanoe (Cunningham); Jasper (Barnes); Fayette (Hessler); Lake (Hill).

J. SCIRPOIDES Lam. Scirpus-like Rush.

Found throughout the State, growing in wet, sandy soils. Apparently in greater abundance in the northern part of the State.

Flowers in July and August.

Laporte (Hill); Jefferson.

J. BRACHYCEPHALUS (Engelm.) Buch.

(*J. Canadensis brachycephalus* Engelm.)

Found in the northern part of the State in considerable abundance. Usually not separated from *J. Canadensis*, with which it is often associated.

Flowers in August and September.

Laporte.

J. CANADENSIS J. Gay.

Commonly found throughout the State, but especially abundant in the northern counties.

Flowers in August and September.

Shriner Lake (Deam); Steuben (Bradner); Laporte (Hill).

J. ACUMINATUS Michx. Sharp-fruited Rush.

Found throughout the State in low, wet grounds; seems to grow more vigorously in sandy soils. Abundant in all of its stations.

Flowers in May and June.

Vigo (Blatchley).

J. ACUMINATUS DEBILIS (A. Gray) Engelm.

In wet sands on the margins of ponds and streams. Abundant in the stations in which it occurs.

Flowers in May and June.

Vigo (Blatchley).

JUNCOIDES Adans.

J. PILOSUM (L.) Kuntze. Hairy Wood-rush.

(*Luzula vernalis* DC.)

Reported as a member of the State flora by Dr. D. T. MacDougal. Verifying specimens in herbarium of DePauw University.

Putnam (MacDougal).

J. CAMPESTRE (L.) Kuntze. Common Wood-rush.

(*Luzula campestris* DC.)

Found plentifully in all parts of the State in open woods and other light shades.

Flowers in May.

Jefferson (Barnes); Fayette (Hessler); Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner).

MELANTHACEÆ. Bunch-flower Family.

TOFIELDIA Huds.

T. GLUTINOSA (Michx.) Pers.

Found in the bogs and marshes of the northern counties. Not reported as occurring south of Cass County. While frequently found it is nowhere abundant.

Flowers in May and June.

Noble (Van Gorder); Lake (Hill); Cass (Hessler); Steuben (Bradner).

CHAMÆLIRIUM Willd.

C. LUTEUM (L.) A. Gray. Blazing Star.

(*C. Carolinianum* Willd.)

Found in the most of the southern Counties growing in low grounds. Frequently met, but abundant in none of its stations. Apparently more vigorous in moist meadows, though also found in shaded localities.

Flowers in May and June.

STENANTHIUM Kunth.

S. GRAMINEUM (Ker.) Morong. Grass-leaved Stenanthium.

(*S. angustifolium* Gray.)

Found in dry soil in the southern counties, usually occurring on hills fronting the Ohio River. A southern form of limited distribution in the State.

Flowers in August and September.

MELANTHIUM L.

M. VIRGINICUM L. Bunch-flower.

In many parts of the State growing in marshes and wet woods. Nowhere abundant, but more frequent in the southern counties than in the northern.

Flowers in June and July.

Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Floyd and Harrison (Clapp).

VERATRUM L.

V. VIRIDE Ait. Indian Poke. American White Hellebore.

Sparingly found in many localities, growing in swamps and wet woods and thickets.

Flowers in May and June.

V. WOODII Robbins.

In central and southern counties growing in dry soils, usually on shaded slopes. Not plentiful in any of the stations in which it occurs.

Flowers in June and July.

Greene (Wood); Montgomery, Decatur (Shannon); Vigo, Monroe and Tippecanoe (Blatchley); Hamilton (Wilson).

UVULARIA L.

U. PERFOLIATA L. Perfoliate Bellwort.

In rich, moist soils of woods and thickets throughout the State. Usually plentiful in the stations in which it occurs.

Flowers in May and June.

Jefferson (J. M. Coulter); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Putnam (MacDougal).

U. GRANDIFLORA J. E. Smith. Large-flowered Bellwort.

In moist, shaded places, in rich soil throughout the State. Usually abundant in all of its stations.

Flowers from April through June.

Tippecanoe (Cunningham); Daviess (Clements); Franklin (Meyneke); Clark (Baird and Taylor); Jefferson (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Monroe (Blatchley); Putnam (MacDougal); Dearborn (Collins); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson).

U. SESSILIFOLIA L.

(*Oakesia sessilifolia* S. Wats.)

Reported only from the southern counties, but doubtless of wider range in the State. It grows in moist woods and thickets, in rich soils, or in those containing much clay.

Flowers in May and June.

Jefferson (Barnes); Monroe (Blatchley); Clark (Baird and Taylor); Gibson and Posey (Schneck).

LILIACEÆ. Lily Family.**HEMEROCALLIS** L.**H. FULVA** L. Day Lily.

Escaped from cultivation in the southern counties and established in meadows and along streams.

Flowers in June and July.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Vigo (Blatchley).

H. FLAVA L. The Yellow Day Lily.

Found escaped from cultivation in the southwest. It occurs at the edges of gardens or in abandoned flower plats.

Flowers in June and July.

Gibson.

ALLIUM L.**A. TRICOCCUM** Ait. Wild Leek.

Throughout the State in rich soils in shaded places. Usually abundant where found, at times covering large areas to the practical exclusion of other plants.

Flowers in June and July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Fountain (Wright); Fayette (Hessler); Hamilton (Wilson); Steuben (Bradner).

A. CERNUUM Roth. Nodding Wild Onion.

Found abundantly throughout the State growing on gravelly banks, limestone ledges and wet meadows. Varies in size with the soil. Very variable.

Flowers in July and August.

Cass (Hessler); St. Joseph and Jefferson (Barnes); Owen and Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Lake (Hill); Decatur (Ballard); Vigo (Blatchley); Steuben (Bradner).

A. STELLATUM Ker. Prairie Wild Onion.

This western form is reported from Kosciusko County by Mr. W. W. Chipman. Probably entered the State along railway lines.

Flowers in July and August.

A. VINEALE L. Wild Garlic. Field Garlic.

Found in fields in the central and southern counties. Quite abundant locally.

Flowers in June and July.

Tippecanoe (Cunningham); Franklin (Meyncke.)

A. CANADENSE L. Meadow Garlic.

Found throughout the State in moist soils, either in meadows or open woods. As a rule, quite common in its stations.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Daviess (Clements); Cass (Hessler); Hamilton and Marion (Wilson).

NOTHOSCORDUM Kunth.

N. BIVALVE (L.) Britton. Yellow False Garlic.

(*N. striatum* Kunth.)

On sandy hillsides and gravelly banks in various counties. Not common in any of the stations in which it occurs.

Flowers from March through July.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Vigo (Blatchley).

LILIUM L.

L. PHILADELPHICUM L. Red Lily. Wood Lily.

Throughout the State in dry soil in woods and thickets. Is most vigorous in sand soils.

Flowers in June and July.

Cass (Hessler); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Noble (Van Gorder); Gibson and Posey (Schneck); Hamilton (Wilson).

L. CANADENSE L. Yellow Lily.

Throughout the State, usually in moist soils in open places. The color of perianth-segments varies from yellow to red.

Flowers in June and July.

Tippecanoe (Cunningham); Cass (Hessler); Vigo (Blatchley); Franklin (Meyncke); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Vermillion (Wright); Fayette (Hessler); Kosciusko (Chipman); Steuben (Bradner); Carroll.

L. SUPERBUM L. Turk's-cap Lily.

Found throughout the State in marshes and damp meadows, but abundant in none of its stations. Of more frequent occurrence in the northern than in the southern counties.

Flowers in July and August.

St. Joseph and Laporte (Barnes); Gibson and Posey (Schneck); Noble (Van Gorder); Randolph (Phinney); Franklin (Meyncke); Steuben (Bradner).

ERYTHRONIUM L.

E. AMERICANUM Ker. Yellow Adder's-tongue.

Found abundantly in all parts of the State in rich, rather moist soil, in open woods or other light shades.

Flowers from March until late in May.

Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Cunningham); Fayette (Hessler); Decatur (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

E. ALBIDUM Nutt. White Adder's-tongue.

Throughout the State in open woods and clearings in moist, rich soils. Plentiful, but not so abundant as the preceding species.

Flowers from March through May.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Vigo (Blatchley); Clark (Baird and Taylor); Dearborn (Collins); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

QUAMASIA Raf.**Q. HYACINTHINA (Raf.) Britton.** Wild Hyacinth. Squills.

(*Camassia Fraseri* Torr.)

Along streams and in rich, moist soils in many parts of the State. The species, formerly quite plentiful, is rapidly becoming extinct. To the north it occurs in drift soils.

Flowers in April and May.

Tippecanoe (Cunningham); Daviess (Clements); Cass (Hessler); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Dearborn (Collins); Hamilton (Wilson).

ORNITHOGALUM L.**O. UMBELLATUM L.** Star of Bethlehem.

In fields and meadows in the southern counties, and sparingly escaped from cultivation elsewhere in the State.

Flowers in May and June.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Decatur (Ballard); Vigo (Blatchley).

MUSCARI Mill.**M. BOTRYOIDES (L.) Mill.** Grape Hyacinth.

Sparingly escaped from cultivation in the southern counties, along roadsides near gardens.

Flowers from April through June.

Jefferson (J. M. Coulter); Clark (Baird and Taylor).

ALETRIS L.

A. FARINOSA L. Star-grass. Colic-root.

In various parts of the State, growing in dry, sandy or gravelly soil. Quite scarce in all localities from which it is reported.

Flowers in May and June.

Cass (Hessler); White (Hussey); St. Joseph (Barnes); Lake and Vigo (Blatchley); Gibson and Posey (Schneck).

CONVALLARIACEÆ. Lily-of-the-Valley Family.

ASPARAGUS L.

A. OFFICINALIS L. Asparagus.

Escaped from cultivation in many parts of the State, and very persistent where it has obtained a foothold. Found frequently as an annoying weed in cemeteries, having been largely planted in such places in past years.

Flowers from May until in September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Jefferson (Barnes); Franklin (Meyncke); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

VAGNERA Adans.

V. RACEMOSA (L.) Morong. Wild Spikenard.

(*Smilacina racemosa* Desf.)

Found abundantly in all parts of the State, growing in moist soils in woods or on shaded banks. The berries are aromatic.

Flowers in May and June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Fayette (Hessler); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

V. STELLATA (L.) Morong. Star-flowered Solomon's Seal.

(*Smilacina stellata* Desf.)

In moist soils in shaded places, in various parts of the State. Found sparingly in all of its stations.

Flowers in May and June.

Jefferson (J. M. Coulter); Franklin (Meyncke); Noble (Van Gorder); Gibson and Posey (Schneck); Tippecanoe (Hussey); Hamilton (Wilson).

UNIFOLIUM Adans.

U. CANADENSE (Desf.) Greene. False Lily-of-the-Valley.

(Maianthemum Canadense Desf.)

Found in the northern counties of the State in damp, shaded places. A favorite situation for the form seems to be in tamarack swamps that have been partially dried through drainage.

Flowers in May and June.

Cass (Hessler); Noble (Van Gorder); Steuben (Bradner); Lake (Blatchley).

POLYGONATUM Adans.

P. BIFLORUM (Walt.) Ell. Hairy Solomon's Seal.

Found in all parts of the State growing in open woods and thickets. Usually abundant in the stations in which it occurs.

Flowers from April through July.

Daviess (Clements); Putnam (MacDougal); Jefferson (J. M. Coulter); Franklin (Meyneke); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. COMMUTATUM (R. and S.) Dietr. Smooth Solomon's Seal.

(P. giganteum Dietr.)

Very abundant in all parts of the State, growing on shaded banks and damp hillside thickets. Very variable in size and in leaf-form.

Flowers in May and June, continuing through July in the deeper shades.

Tippecanoe (Cunningham); Daviess (Clements); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jefferson (J. M. Coulter); Franklin (Meyneke); Clark (Baird and Taylor); Dearborn (Collins); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

CONVALLARIA L.

C. MAJALIS L. Lily-of-the-Valley.

Escaped from cultivation in many places and very persistent. As an escape it flowers very sparingly, sometimes not at all.

MEDEOLA L.

M. VIRGINIANA L. Indian Cucumber-root.

Found in many counties of the State in rich, moist soils of woods and thickets. Not abundant in any of its stations.

Flowers in May and June.

Jefferson (Barnes); Monroe (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Fayette (Hessler); Steuben (Bradner); Lake.

TRILLIUM L.

T. SESSILE L. Sessile-flowered Wake-robin.

Common in rich moist soils of woods and thickets in all parts of the State. Flowers have a very pleasant odor.

Flowering season April and May.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Fayette (Hessler); Decatur (Ballard); Vigo (Blatchley); Steuben (Bradner).

T. RECURVATUM Beck. Prairie Wake-robin.

Growing in woods and thickets in moist, rich soils. Very abundant in all of its stations.

Flowering season from April until June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson and Cass (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Decatur (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

T. NIVALE Riddell. Early Wake-robin.

Found sparingly in various counties of the State, chiefly southern, growing in rich, damp woods and thickets.

Flowers from March through May.

Monroe (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Decatur (Ballard); Tippecanoe.

T. GRANDIFLORUM (Michx.) Salisb. Large-flowered Wake-robin.

Occasionally found in rich woods, chiefly in the northern counties. Many forms so referred in herbaria are really *T. erectum* L.

Flowers in May and June.

Gibson and Posey (Schneck); Noble (Van Gorder); Steuben (Bradner).

T. ERECTUM L. Ill-scented Wake-robin.

Quite abundant in most parts of the State, growing in rich, moist soils in shaded places. Variable in size and especially in color of the flowers. The flowers have a very unpleasant odor.

Flowering season, April through June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Dearborn (Collins); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Decatur (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

T. CERNUUM L. Nodding Wake-robin.

Found in moist, rich soils in shaded situations in various counties of the State, chiefly southern. Frequently confounded with pendulous forms of the preceding species.

Flowers from April through June.

Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner); Jefferson and Marion.

SMILACEÆ. Smilax Family.**SMILAX L.****S. HERBACEA L. Carrion-flower.**

Found throughout the State in rich, damp soils, usually in shaded situations. Abundant in all of its stations. The flowers are carrion scented.

Flowers from April through June.

Tippecanoe (Cunningham); Daviess (Clements); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Vermillion (Wright); Fayette, Cass, (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

S. ECIRRHATA (Engelm.) S. Wats. Upright Smilax.

Sparingly found in dry soil along railroad embankments. Not of general distribution; possibly a migrant.

Flowers in May and June.

Hamilton (Wilson).

S. GLAUCA Walt. Glaucous-leaved Greenbrier.

In dry, sandy soil, reported only from the southern counties, but probably found throughout our area.

Flowers in May and June.

Vigo (Blatchley); Putnam (MacDougal); Jefferson (J. M. Coulter); Gibson and Posey (Schneck).

S. ROTUNDIFOLIA L. Greenbrier. Catbrier. Horsebrier.

In moist woods and borders of thickets, usually in rich soils. Plentiful in all parts of the State. The blue-black berries make the plant very attractive in the fall and early winter.

Flowers from April through June.

Tippecanoe (Cunningham); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Gibson and Posey (Schneck); Decatur (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. HISPIDA Muhl. Hispid Greenbrier.

In various parts of the State, growing in rich, rather sandy soils in shaded places. Abundant in all of its stations.

Flowers from May through July.

Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Putnam (MacDougal); Gibson and Marion.

S. PSEUDO-CHINA L. Long-stalked Greenbrier.

Reported only from the southern counties, as found sparingly in sandy hillside thickets. Probably to be found in favorable situations throughout the State.

Flowers from May through August.

Daviess (Clements); Floyd (Clapp); Putnam (MacDougal); Vigo (Blatchley).

S. LANCEOLATA L. Lance-leaved Greenbrier.

Found in dry thickets, near railroads in a single county. The form is southern and its occurrence in our area is to be regarded as exceptional.

Flowers from March until September.

Decatur (Ballard).

AMARYLLIDACEÆ. Amaryllis Family.

HYMENOCALLIS Salisb.

H. OCCIDENTALIS (Le Conte) Kunth.

A southern and western form which is found only in our extreme southwestern counties, where it grows sparingly in moist, rich soils.

Flowers in July and August.

Gibson and Posey (Schneck).

AGAVE L.

A. VIRGINICA L. False Aloe.

Found in the southern part of the State, growing in dry, usually sandy soils in upland or hill situations. Flowers pleasantly fragrant, retaining fragrance after drying for a considerable time.

Flowers in June and July.

Daviess (Clements); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Scott (Coulter).

HYPOXIS L.

H. HIRSUTA (L.) Coville. Star-grass.

(*H. erecta* L.)

Found in dry, usually sandy soils in all parts of the State. Usually quite plentiful in the stations in which it occurs.

Flowers from May until the early frosts.

Fayette (Hessler); Steuben (Bradner); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney).

DIOSCOREACEÆ. Yam Family.

DIOSCOREA L.

D. VILLOSA L. Wild Yam-root.

In damp, rich soils in shaded situations in many counties of the State, chiefly southern. The fruit which ripens in September is persistent through the winter.

Flowers in June and July.

Tippecanoe (Cunningham); Daviess (Clements); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Jefferson (J. M. Coulter).

IRIDACEÆ. Iris Family.

IRIS L.

I. VERSICOLOR L. Larger Blue Flag.

Throughout the State in marshes and low, wet places, usually in great abundance in all of its stations. One of our most showy marsh plants.

Flowers from May until in July.

Tippecanoe (Cunningham); Daviess (Clements); Clark and Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Noble (Van Gorder); Vermillion (Wright); Decatur (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

I. CRISTATA Ait. Crested Dwarf Iris.

In the southern counties on hills and along streams. Sparingly found in its various stations. Most abundant perhaps in moist places in the knobs.

Flowers in April and May.

Clark (Baird and Taylor); Monroe (Blatchley).

GEMMINGIA Fabr.

G. CHINENSIS (L.) Kuntze. Blackberry Lily.

(*Belamcanda Chinensis* Adans.)

Found in the southern counties along roadsides and upon hill-sides.

Flowers in June and July.

Daviess (Clements); Franklin (Meyncke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley).

SISYRINCHIUM L.

S. GRAMINOIDES Bicknell. Stout Blue-eyed Grass.

(*S. anceps* Cav.)

In grassy places in moist soils. Frequent, but nowhere abundant.

Flowers in April and May.

Decatur (Ballard).

S. ANGUSTIFOLIUM Mill. Blue-eyed Grass.

Abundantly found throughout the State in moist, grassy places, usually in open fields and meadows.

Flowers from May until September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Clark and Jefferson (Barnes); Noble (Van Gorder); Franklin (Meyneke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Steuben (Bradner); Hamilton (Wilson); Fayette (Hessler); Vigo (Blatchley); Wabash (Jenkins).

ORCHIDACEÆ. Orchid Family.**CYPRIPEDIUM L.****C. ACAULE Ait. Moccasin Flower. Stemless Lady's Slipper.**

Found only in the northern part of the State. It is of fair abundance in the stations in which it occurs. It is found in dry shaded places, but in our area is most abundant in dense tamarack swamps on coarse soiled knolls.

Flowers in May and June.

Cass (Hessler); Noble (Van Gorder); Fulton (Blatchley).

C. REGINÆ Walt. Showy Lady's Slipper.

(*C. spectabile* Salisb.)

Found in the northern counties in swamps and low grounds. Rare in all of its stations.

Flowers from June through September.

Noble (Van Gorder); Kosciusko (Chipman); Marshall (Hessler); Hamilton (Wilson); Lake and Porter; Steuben (Bradner).

C. CANDIDUM Willd. Small, White Lady's Slipper.

Found only in the extreme southwestern counties on the borders of swamps. Of very occasional occurrence.

Flowers in May and June.

Gibson and Posey (Schneck); Steuben (Bradner).

C. HIRSUTUM Mill. Large, Yellow Lady's Slipper.

(*C. pubescens* Willd.)

The most common species of the genus in the State. Found in many counties, growing in woods and thickets in rich, dry soil. Much more abundant than any other orchid.

Flowers in May and June.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Franklin (Meyneke); Noble (Van Gorder); Monroe and Vigo (Blatchley); Decatur (Ballard); Hamilton (Wilson); Steuben (Bradner).

C. PARVIFLORUM Salisb. Small, Yellow Lady's Slipper.

Found in a few counties in sparing numbers associated with *C. hirsutum*, with which it intergrades.

Flowers in May and June.

Gibson and Posey (Schneck); Dearborn (Collins); Noble (Van Gorder); Lake (Blatchley).

ORCHIS L.

O. SPECTABILIS L. Showy Orchis.

Throughout the State, growing in rich soils in woods or thickets. In some of its stations it is quite plentiful. In many respects one of the most attractive of the orchids. The flowers are pleasantly fragrant.

Flowering season, April and May.

Tippecanoe (Cunningham); Clark (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (Barnes); Dearborn (Collins); Noble (Van Gorder); Knox (Spillman); Hamilton (Wilson); Steuben (Bradner); Fayette (Hessler).

HABENARIA Willd.

H. ORBICULATA (Pursh) Torr. Round-leaved Orchis.

A form that has entered our flora from the north. It is found in the northern part of the State in rich, shaded soils in sparing numbers.

Flowers in July and August.

Noble (Van Gorder).

H. HOOKERIANA Gray.

(*H. Hookeri* Torr.)

In the northern parts of the State associated with the preceding species, from which it is not easily separable.

Flowers in July and August.

Noble (Van Gorder); Lake (Hill).

H. HYPERBOREA (L.) R. Br. Tall Leafy Green Orchis.

Occasional in swamps and wet woods in the extreme northern counties.

Flowers in May and June.

Lake (Hill); Porter.

H. BRACTEATA (Willd.) R. Br. Bracted Orchis.

In many counties of the State growing in open woods or upon hillsides, usually in thin, sandy soil. Not infrequent, but nowhere abundant.

Flowers from May through August.

Tippecanoe (Hussey); Noble (Van Gorder); Cass (Hessler); Kosciusko (Coulter); Vigo (Blatchley); Lake (Hill).

H. CLAVELLATA (Michx.) Spreng. Green Wood Orchis.

(*H. tridentata* Hook.)

Reported only from the north as of occasional occurrence in moist, shaded soils.

Flowering season July and August.

Lake (Hill).

H. FLAVA (L.) Gray.

(*H. virescens* Spreng.)

In damp, dense woods, in the southwestern part of the State. Of exceptional occurrence. Added to the State flora by Professor Blatchley.

Flowering specimens collected in June.

Vigo (Blatchley); Gibson; Steuben (Bradner).

H. CILIARIS (L.) R. Br. Yellow-fringed Orchis.

In the northern part of the State in moist, low grounds. Very occasional.

Flowers in July and August.

St. Joseph (Barnes); Tippecanoe (Noel); Steuben (Bradner).

H. LACERA (Michx.) R. Br. Ragged Orchis.

In peat bogs in the central and northern counties. Very exceptionally found.

Flowers in June and July.

Fulton (Hessler).

H. LEUCOPHÆA (Nutt.) Gray. White-fringed Prairie Orchis.

Moist soils in open places in the central and northern counties. Frequent.

Flowers in July and August.

White (Hussey); Noble (Van Gorder); Steuben (Bradner).

H. PSYCODES (L.) Gray. Purple-fringed Orchis.

Fairly distributed throughout the State, growing in moist soils either in woods or open places. Most frequently found in marshes.

Flowers in July and August.

Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Noble (Van Gorder); Steuben (Bradner).

H. PERAMCENA Gray. Fringeless Purple Orchis.

Quite plentiful in the southern counties in moist, open places. Flower fragrant.

Flowers in June and July.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Monroe and Vigo (Blatchley).

POGONIA Juss.**P. OPHIOGLOSSOIDES (L.) Ker. Rose Pogonia. Snake-mouth.**

Somewhat abundant in the northern counties, growing in marshy places and peat bogs.

Flowers in June and July.

Noble (Van Gorder); Marshall (Hessler); Kosciusko (Coulter); Lake (Hill); Steuben (Bradner).

P. TRIANTHOPHORA (Sw.) B. S. P. Nodding Pogonia.

(*P. pendula* Lindl.)

Found throughout the State in rich soil, usually in woods or thickets. Frequent but not abundant.

Flowers in July and August.

Noble (Van Gorder); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Shriner Lake (Deam); Hamilton (Wilson); Fayette (Hessler); Lake; Steuben (Bradner).

P. VERTICILLATA (Willd.) Nutt. Whorled Pogonia.

Found sparingly in southern and south central counties in damp woods in rich soils.

Flowers in June and July.

Jefferson (Barnes); Monroe (Blatchley).

ARETHUSA L.**A. BULBOSA L.**

This distinctly northern form is found in the northwestern part of the State, growing in marshes.

Flowering specimens collected May 19.

Lake.

GYROSTACHYS Pers.

G. PLANTAGINEA (Raf.) Britton. Wide-leaved Ladies' Tresses.

(Spiranthes latifolia Torr.)

In the central and northern counties on shaded banks and in woods in damp, rich soil.

Flowers from June until in August.

Tippecanoe (Hussey); Noble (Van Gorder).

G. CERNUA (L.) Kuntze.

(Spiranthes cernua Richard.)

Throughout the State, growing in marshes and low, wet meadow lands. Frequently met but nowhere abundant.

Flowers in August and September.

Cass (Hessler); Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Noble (Van Gorder).

G. PRÆCOX (Walt.) Kuntze. Grass-leaved Ladies' Tresses.

(Spiranthes præcox Walt.)

A sheet of rather scanty material seems referable to this species. The normal range is so far to the east that the reference is doubtfully made.

Collected in flower July 23.

Clark (Baird and Taylor); Steuben (Bradner).

G. GRACILIS (Bigel.) Kuntze. Slender Ladies' Tresses.

(Spiranthes gracilis Bigel.)

Not uncommon in many counties in dry soil, in light woods or open places.

Flowering season, August and September.

Tippecanoe (Hussey); Jefferson (Barnes); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Lake.

PERAMIUM Salisb.

P. PUBESCENS (Willd.) MacM. Downy Rattlesnake Plantain.

(Goodyera pubescens R. Br.)

Found sparingly in many counties of the State, usual in high, dry soil in shaded places. In greater abundance in the more northern counties.

Flowers in July and August.

Cass (Hessler); Monroe and Vigo (Blatchley); Noble (Van Gorder); Gibson (Schneck); Putnam (MacDougal); Lake (Hill).

ACHROANTHES Raf.

A. MONOPHYLLA (L.) Greene. White Adder's-mouth.

(Microstylis monophylla Lindl.)

In moist woods in the southern counties.

Flowers in July.

Floyd (Clapp).

A. UNIFOLIA (Michx.) Raf. Green Adder's-tongue.

(Microstylis ophioglossoides Nutt.)

In dry soils throughout the State, in woods and thickets. Not of frequent occurrence.

Flowers from July until in September.

Vigo and Monroe (Blatchley); Noble (Van Gorder).

LEPTORCHIS Thouars.

L. LILIIFOLIA (L.) Kuntze. Large Twayblade.

(Liparis liliifolia Richard.)

Throughout the State in rich, moist soils, in open woods and thickets. While found in many localities it is abundant in none of its stations.

Flowers from May through July.

Vigo and Monroe (Blatchley); Clark (Barnes); Union and Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyncke); Fayette (Hessler); Jefferson.

L. LOESELII (L.) MacM. Fen Orchis.

(Liparis Loeselii Richard.)

In the northern counties of the State, growing sparingly in wet soils of hillsides and thickets. Also found in the springy or quaking ground about lakes.

Flowers from May until July.

Fulton (Blatchley); Cass (Hessler); Kosciusko (Chipman); Noble (Van Gorder); Lake (Hill).

CORALLORHIZA R. Br.

C. CORALLORHIZA (L.) Karst. Early Coral-root.

(C. innata R. Br.)

In the southern part of the State in dry, somewhat sandy soils in open woods.

Flowering season May and June.

Floyd (Clapp).

C. ODONTORHIZA (Willd.) Nutt. Small-flowered Coral-root.

In various counties, chiefly southern, growing in shaded places. Found in many localities, but never abundant.

Flowers in July and August.

Clark and Jefferson (Barnes); Monroe (Blatchley); Franklin (Meyncke); Gibson and Posey (Schneck); Round Lake (Deam); Fayette (Hessler); Steuben (Bradner).

C. MULTIFLORA Nutt. Large Coral-root.

Of exceptional occurrence in a few stations, growing in open woods and thickets.

Flowers in July and August.

Noble (Van Gorder); Jefferson; Steuben (Bradner).

TIPULARIA Nutt.

T. UNIFOLIA (Muhl.) B. S. P. Crane-fly Orchis.

(*T. discolor* Nutt.)

This local and rare species has been collected at Clifty Falls by Professor A. H. Young, of Hanover College. So far as I am able to determine, this is the only reference for the State.

Flowering specimens collected in July.

Jefferson (Young).

LIMODORUM L.

L. TUBEROSUM L. Grass-pink.

(*Calopogon pulchellus* R. Br.)

In various counties of the State in bogs and wet soils. Quite plentiful, as a rule, in the stations in which it occurs.

Flowers in June and July.

Cass (Hessler); St. Joseph (Barnes); Noble (Van Gorder); Gibson (Schneck); Lake (Hill); Steuben (Bradner).

HEXALECTRIS Raf.

H. APHYLLUS (Nutt.) Raf. Crested Coral-root.

In the southern part of the State in rich woods. So far as my records show it was first collected by Mr. W. S. Blatchley.

Flowers in August.

Crawford (Blatchley).

APLECTRUM Nutt.

A. SPICATUM (Walt.) B. S. P. Putty root. Adam and Eve.

(*A. hyemale* Nutt.)

Frequent in many parts of the State, usually in rich, sandy soils in open woods; frequently, especially in the northern counties, growing plentifully in swamps. A very noticeable form in the early spring because of the abundant, large, elliptic leaves which have persisted through the winter.

Flowers in May and June.

Clark (Barnes); Putnam (MacDougal); Franklin (Meyneke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Vigo (Blatchley); Hamilton (Wilson); Tippecanoe; Steuben (Bradner); Fayette (Hessler).

Sub-class 2.

DICOTYLEDONES.

Series 1.

CHORIPETALÆ.

SAURURACEÆ. Lizard's-tail Family.

SAURURUS L.

S. CERNUUS L. Lizard's-tail.

In wet, swampy places and along ditches and by the borders of ponds. Usually in shaded places in rich soils. In favorable situations I have seen it cover acres. A handsome plant with fragrant flowers.

Flowers from June through August.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Kosciusko (Coulter); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Hamilton and Marion (Wilson); Steuben (Bradner); Marshall (Hessler).

JUGLANDACEÆ. Walnut Family.

JUGLANS L.

J. NIGRA L. Black Walnut.

Originally distributed in great abundance throughout the State, but now pretty thoroughly removed because of its high commercial

value. Some considerable areas are still found, remote from means of transportation, in which it still abounds, and considerable care is being exercised in the conservation and protection of the second growth. The tree reaches a height of from 100 to 150 feet and a trunk diameter of from five to ten feet. It is found chiefly in rich bottom lands and on hillsides. Its great value suggests it as a suitable species for reforestation purposes. Its uses are too well known to need mention. Two well-marked varieties, recognized by lumbermen and nut-gatherers, exist in our area; they are not, however, considered as botanically distinct.

Flowers in April and May; nuts ripen after the heavier frosts.

Distribution general.

J. CINEREA L. Butternut. White Walnut.

Generally distributed throughout the State in fair abundance, except in the southwestern counties in which it occurs exceptionally. A tree from sixty to eighty feet in height and of a trunk diameter of from two to three feet. It grows chiefly in rich woodlands and reaches its greatest development along the Ohio River, where it occasionally reaches a height of one hundred and ten feet.

The wood is light and soft, not strong, easily worked, taking a beautiful polish. Used chiefly for interior finish, cabinet work, etc.

Flowers in April and May; fruit ripens with the frosts.

Distribution general.

HICORIA Raf.

H. PECAN (Marsh.) Britton. Pecan.

(*Carya olivæformis* Nutt.)

Found in southern and southwestern counties in considerable abundance and following the river courses in less numbers well to the north. It grows in bottom lands and alluvial soils. A tree from one hundred to one hundred and sixty feet in height and with a trunk diameter of from three to five feet.

The wood is heavy and hard, but brittle, and much less valuable than that of other hickories. It is used locally for wheel stock and fuel. Its sweet, edible nuts form an important article of commerce.

Flowers in April and May; fruit ripens in September and October.

Range indicated above.

H. MINIMA (Marsh.) Britton. Bitter-nut. Swamp Hickory.
(*Carya amara* Nutt.)

Distributed sparingly in various parts of the State, but chiefly in the northern portions. Generally found on the borders of streams and swamps. A tree from sixty to eighty feet high, with a trunk diameter of from two to three feet.

The wood is heavy and tough, but checks in drying. Used extensively for hoops, ox yokes, etc., and locally for wheel stocks.

Flowers in May and June; nuts ripen in September and October.
Range as indicated.

H. OVATA (Mill.) Britton. Shell-bark or Shag-bark Hickory.
(*Carya alba* Nutt.)

Well distributed throughout the State and in most regions in great abundance. It is found in its best development in rich soils, though often growing on sandy ridges. A large tree ranging from 80 to 100 feet in height, though occasionally reaching 125 to 150 feet, with a trunk diameter of from three to five feet.

The wood is very hard and strong, tough and flexible, the more valuable portion being the nearly white sap-wood. It is used in the manufacture of agricultural implements, carriages, ax handles, baskets, etc. Large quantities are used locally for wheel stock. The nuts form a valuable commercial product.

Flowers in May; nuts ripen in September and October.
Range general.

H. LACINIOSA (Michx. f.) Sarg. Big Shell-bark. King Nut.
(*Carya sulcata* Nutt.)

This species is definitely reported from 36 counties, and is abundant in almost all of the southern counties. Dr. Ridgway reports it as "quite as abundant as *H. ovata* in lower Wabash district." This general distribution is of peculiar interest, since Professor Sargent, in Vol. IX, Tenth Census, p. 133, reports it as "Rare and local." It is found in moist, rich, usually alluvial soils. A tree from 80 to 100 feet in height, with a trunk diameter of from two to four feet.

The wood is of the same general character as that of *H. ovata* and is used for the same purposes.

Flowers in May; nuts ripen in September and October.
Distribution general.

H. ALBA (L.) Britton. Mocker-nut. White-heart Hickory.
(*Carya tomentosa* Nutt.)

Common in the more southern counties of the State. Less frequent northward. Generally found in rich uplands, less commonly

in bottom lands. A tree ranging in height from 80 to 100 feet, with a trunk diameter of from two to four feet.

The wood is similar to that of *H. ovata* and is used for the same purposes.

Flowers in May and June; nuts ripen in October and November. Range as indicated.

H. MICROCARPA (Nutt.) Britton. Small-fruited Hickory.
(*Carya microcarpa* Nutt.)

Found in rich woods throughout the central and southern counties in rich soils. Found associated with *H. ovata*, from which it is usually not separated. It can be distinguished from *H. ovata* by its rough, close bark; smaller ovate buds, and smaller, thin-husked fruit. A tree rarely exceeding 80 feet in height or a trunk diameter of three feet.

The hard, tough wood is of the same character as that of *H. ovata* and is used for the same purposes.

Flowers in May and June; nuts ripen in September and October. Range as indicated.

H. GLABRA (Mill.) Britton. Pig-nut Hickory. Brown Hickory.
(*Carya porcina* Nutt.)

Commonly distributed throughout the State, though not frequent in the extreme southwestern counties. A tree from 80 to 100, exceptionally 120 feet in height, and with a trunk diameter of from three to five feet.

The wood is of the same character as that of *H. ovata* and is used for the same purposes. The species is usually found growing on dry hills.

Flowers in May and June; the bitter fruit ripens in October and November.

Range general.

MYRICACEÆ. Bayberry Family.

COMPTONIA Banks.

C. PEREGRINA (L.) Coulter. Sweet Fern.
(*Myrica asplenifolia* L.)

A northern form, confined to the extreme north part of the State, where it occurs in dry, sand soils, especially upon sand hills. No where abundant.

Flowers in April and May.

Lake (Hill).

SALICACEÆ. Willow Family.

POPULUS L.

P. ALBA L. White or Silver-leaf Poplar.

This tree has escaped so widely from cultivation as to be considered a member of the State flora. It is found in yards and along roadsides, having sprung up from suckers of older trees. The species thrives well and grows rapidly as an escape. The wood is soft and light and of little use in manufactures.

Flowers in March and May.

Range is practically identical with the places in which it has been cultivated.

P. HETEROPHYLLA L. Swamp or Downy Poplar.

Found in the swamps and alluvial soils of the southwestern counties. A tree from eighty to ninety feet in height and of a trunk diameter of from two to two and one-half feet. Its wood is light, soft and not strong. The species, according to Dr. Ridgway, is much more abundant than any other species of the genus in Knox and Gibson counties.

Flowers in April and May.

Vigo (Blatchley); Gibson and Posey (Schneck); Knox (Ridgway); Hamilton (Doane).

P. GRANDIDENTATA Michx. Great-toothed Aspen or Poplar.

This species is not of large distribution in the State. It is found in rich woods and along the borders of streams and swamps.

The wood is light, soft and not strong, and is of little value save for paper pulp.

Flowers in April and May.

In addition to the citations the species is found sparingly along the lower stretches of the Wabash and its tributaries.

Gibson (Schneck); Knox (Ridgway).

P. TREMULOIDES Michx. American Aspen.

Fairly distributed throughout the State; common in the northern and central counties, somewhat rare in the southwest. Dr. Ridgway says: "I have never seen *P. tremuloides* in Knox or Gibson county, though it may occur." Dr. Schneck, however, reports it as rare in Gibson and Posey counties.

The wood is light and soft, neither strong nor durable. Largely manufactured into wood pulp, and in some localities used in turnery and for flooring. The species rarely exceed sixty feet in height, with a maximum trunk diameter of two feet.

Flowers in March and May.

Found in all of the central and northern counties, in dry or moist soils, and in the following southern counties:

Putnam (MacDougal); Decatur (Ballard); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Hamilton and Marion (Wilson).

P. DELTOIDES Marsh. Cottonwood.

(*P. monilifera* Ait.)

Well distributed throughout the State, bordering on streams in low, wet soil. A large tree, from one hundred to one hundred and fifty feet in height, with a trunk diameter of from four to eight feet. Wood very liable to warp in drying; light and soft. Largely used in the manufacture of paper pulp, light packing cases, fence boards and fuel.

It is now being largely planted for ornament and shade, under the name of the Carolina Poplar. It has little to recommend it for this use save its rapid growth and handsome foliage. Apart from these features, it has almost every bad habit that a plant can possess.

Flowers in April and May.

Found practically in every county of the State, for which reason specific ranges are omitted.

SALIX L.

S. NIGRA Marsh. Black Willow.

Found chiefly in the southern counties and entirely absent from some of the northern counties. A small tree, from forty to fifty feet high, with a trunk diameter rarely reaching two feet.

The wood is light, soft, and weak, and checks badly in drying. It has no economic value. The bark is tonic and astringent, and is a popular household febrifuge. Many fine trees of this species are to be found in the southern part of the State which can some day be utilized for lumber for special purposes.

Flowers in April and May.

Vigo (Blatchley); Gibson and Posey (Schneck); Knox (Ridgway); Jefferson (J. M. Coulter); Hamilton (Wilson); Steuben (Bradner).

S. NIGRA FALCATA (Pursh) Torr.

(*S. falcata* Pursh.)

On the banks of streams and ponds; less frequent than the type. Reported by Mr. W. S. Blatchley.

Flowering in May.

Vigo (Blatchley); Steuben (Bradner.)

S. LUCIDA Muhl. Shining Willow. Glossy Willow.

In the swamp regions of the extreme northern counties, so far as reports go. An extremely beautiful form that could scarcely have escaped notice if of any general occurrence. The species has evidently entered our flora from the north.

Flowers in April and May.

Lake (Hill); Hamilton (Wilson); Steuben (Bradner).

S. ALBA L. White Willow.

Fairly distributed in moist soils along streams and about dwellings. Probably escaped from cultivation.

Flowers in April and May.

Jefferson (J. M. Coulter); Putnam (MacDougal); Hamilton and Marion (Wilson); Vigo (Blatchley); Steuben (Bradner).

S. ALBA CÆRULEA (J. E. Smith) Koch.

(*S. cærulea* J. E. Smith.)

An evident escape from cultivation reported by Dr. D. T. MacDougal.

Flowers in April and May.

Putnam (MacDougal).

S. ALBA VITELLINA (L.) Koch. Golden Osier.

Throughout the State in moist soils, especially along streams.

Flowers from April to May.

S. PURPUREA L.

Escaped from cultivation and well established in the southern counties.

Flowering in April and May.

Jefferson (J. M. Coulter); Hamilton (Wilson).

S. FLUVIATILIS Nutt. Sandbar Willow. River-bank Willow.

(*S. longifolia* Muhl.)

In various parts of the State in wet, sandy soil, often forming dense clumps. A tree from 20 to 30 feet high, rarely exceeding a foot in trunk diameter.

The wood is light and soft and is of no economic value.

Flowers in April and May.

Tippecanoe (Cunningham); Putnam (MacDougal); Vigo (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor).

S. HUMILIS Marsh. Prairie Willow.

Found in dry soil in open places, somewhat abundantly. A shrub ranging from two to eight feet in height.

Flowers in April and May.

Laporte (Barnes); Putnam (MacDougal); Vigo (Blatchley); Tippecanoe (Coulter); Hamilton (Wilson); Steuben (Bradner).

S. TRISTIS Ait. Dwarf Gray Willow. Sage Willow.

In dry soil throughout the State.

Flowers in March and April.

S. DISCOLOR Muhl. Pussy Willow. Glaucous Willow.

Generally distributed throughout the State, along streams and borders of swamps in low, wet soil. Rarely exceeding 20 feet in height and more frequently a shrub of from 10 to 15 feet. Wood soft and weak; of no economic value.

Flowers in March and April.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo (Blatchley); Kosciusko (Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Knox (Spillman); Hamilton (Wilson); Steuben (Bradner).

S. SERICEA Marsh. Silky Willow.

In marshes and along streams in the central part of the State. Not common where it occurs.

Flowers in May and June.

Decatur (Ballard); Hamilton (Wilson); Steuben (Bradner); Floyd (Clapp).

S. PETIOLARIS J. E. Smith. Slender Willow.

On low, moist, sandy banks in the southern part of the State. Added to the list by Mr. Blatchley. Only occasionally found.

Flowers in April and May.

Vigo (Blatchley).

S. CANDIDA Fluegge. Hoary Willow.

In the extreme northern part of the State in bogs and wet lands. Found rather abundantly in its stations.

Flowering in May.

Noble (Barnes); Lake (Hill); Steuben (Bradner).

S. CORDATA Muhl. Heart-leaved Willow.

In a few counties in rather sparing numbers, growing in low, moist soils. More abundant southward.

Flowers in April and May.

Putnam (MacDougal); Vigo (Blatchley); Tippecanoe (Coulter).

S. CORDATA ANGUSTATA (Pursh). Anders.

In wet soil in the northern part of the State.

Flowers from April to May.

Steuben (Bradner).

S. GLAUCOPHYLLA Bebb. Broad-leaved Willow.

Found only along the southern shores of Lake Michigan, where it forms an important and characteristic member of the flora of the sand dunes.

Flowers in April.

Lake (Hill); Porter (Cowles).

S. ADENOPHYLLA Hook. Furry Willow.

Another species confined to the shores of Lake Michigan, where it is found in sandy soil, chiefly on sand dunes.

Flowering in April and May.

Lake (Hill); Porter (Cowles).

S. MYRTILLOIDES L. Bog Willow.

In swamps and extremely wet soils in the central and northern counties. An erect, slender shrub from one to three feet high.

Flowers in April and May.

Tippecanoe (Cunningham); Lake (Hill).

The difficulty in the determination of the species of this genus has led to its being largely neglected by collectors. All of the species reported doubtless have a wider range than is indicated by the citations, but in the desire to have the record reliable no stations have been given unless specimens have been examined. The hybridizing of the willows is very general, and adds greatly to the difficulty of determining the material sent for examination. It is believed that the list as given above can be relied upon and will serve as a suggestion to future collectors to devote more care to this interesting genus.

BETULACEÆ. Birch Family.**CARPINUS** L.**C. CAROLINIANA** Walt. Water Beech. Blue Beech. American Hornbeam.

Commonly distributed throughout the State, along the borders of streams and swamps. A small tree, from 30 to 50 feet high, with a trunk diameter rarely exceeding 15 inches.

The wood is very heavy, strong, hard, tough and durable in contact with the soil. Susceptible of a high polish. Used for posts, levers, handles of tools, etc.

Flowers in April and May.

Found in almost every county of the State.

Tippecanoe (Laben and Conner); Putnam (MacDougal); Vigo (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

OSTRYA Scop.

O. VIRGINIANA (Mill.) Willd. Ironwood. Leverwood. Hop-tree.

(*O. Virginica* Willd.)

Commonly distributed throughout the State, in fair abundance except in the southwestern counties, where it is reported as very rare. A small tree, with a maximum height of about 40 feet and a trunk diameter of from ten to twelve inches. Wood similar in character to that of the Water Beech and used for the same purposes. It is usually found on dry, sandy ridges, but occasionally on river banks.

Flowers in April and May.

Jefferson (J. M. Coulter); Putnam (MacDougal); Vigo (Blatchley); Tippecanoe and Kosciusko (Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Hamilton and Marion (Wilson); Steuben (Bradner).

CORYLUS L.

C. AMERICANA Walt. Hazel-nut.

Well distributed throughout the State and usually very abundant where it occurs. It frequently forms dense thickets to the practical exclusion of all other plant forms. In many counties it is so abundant that the nuts furnish a considerable market product. It grows usually in dry soils, but does well in moist, low grounds.

Flowers in March and April; nuts ripen in August, but are not really edible until after frosts.

Tippecanoe; Warren (Sutton); Putnam (MacDougal); Vigo (Blatchley); Kosciusko (Coulter); Floyd (Clapp); Noble (Van Gorder); Steuben (Bradner); Hamilton and Marion (Wilson).

BETULA L.

B. POPULIFOLIA Marsh. American White Birch.

This species occurs in Tippecanoe County, growing in moist soils along the Wabash River. It occurs in sparing numbers. A tree about 40 feet high and with a trunk diameter of from 12 to 15 inches. The wood is soft and weak, being of no special value.

Flowers in May.

Tippecanoe (Golden).

B. PAPYRIFERA Marsh. Paper or Canoe Birch.

Found only in the extreme northern part of the State, where it is reported as occurring in sparing numbers by Rev. E. J. Hill. Normally it is a large tree of from 70 to 80 feet in height and with a trunk diameter of from two to three feet. In our area it is much reduced.

The wood is hard and strong, being largely used in the manufacture of spools, shoe-lasts and pegs, for wood pulp, etc.

Flowering in April and May.

Lake (Hill).

B. NIGRA L. River Birch. Red Birch.

Not abundant in the State and apparently confined to the southern counties, where it grows on the banks of streams and in low, wet grounds. A tall, slender tree reaching at times a height of nearly 100 feet, with a maximum trunk diameter of two and one-half feet.

The wood is hard and strong and is used for furniture and wooden ware.

Flowers in April and May.

Gibson (Schneck); Clark (Baird and Taylor); Putnam, Jackson, Martin, Vigo (Blatchley).

B. LENTA L. Cherry, Black or Sweet Birch.

In a few counties of the State in sparing numbers. The tree in its full development is from 60 to 80 feet high, with a trunk diameter of from three to four feet. In our area it is much reduced in size.

The wood is hard and strong and is used in the manufacture of furniture and in ship building. "The aromatic oil of the branches and foliage is distilled in quantities and is an important article of commerce." (Britton and Brown.)

Flowers in April and May.

Fulton (Hessler); Gibson (Schneck); Noble (Van Gorder); Steuben (Bradner).

B. PUMILA L. Low Birch.

Occasionally found growing in marshes and swamps in the northern part of the State. A shrub ranging from five to fifteen feet in height. Abundant specimens of the species have been collected by Dr. Robert Hessler.

Flowers in May and June.

Fulton (Hessler); Lake; Steuben (Bradner).

ALNUS Gaertn.

A. INCANA (L.) Willd. Speckled or Hoary Alder.

A small tree from twenty to twenty-five feet high, or oftener a branching shrub, found along borders of streams or swamps. Reported only from the northern counties on the authority of the State Catalogue.

Flowers in April and May.

Lake and Porter.

A. RUGOSA (DuRoi) K. Koch. Smooth Alder.

(*A. serrulata* Willd.).

Distributed in fair numbers through the State except in the eastern and southeastern counties. A small tree or shrub growing in wet, marshy regions. A decoction of the bark is a popular remedy against blood impurities.

Flowers in March and April.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Tippecanoe and Kosciusko (Coulter); Noble (Van Gorder); Knox (Ridgway).

FAGACEÆ. Beech Family.

FAGUS L.

F. AMERICANA Sweet. Beech.

(*F. ferruginea* Ait.)

Commonly distributed throughout the State, though in greatest abundance and size in the southern counties. A large tree from 75 to 110 feet high and with a maximum trunk diameter of five feet.

The wood is very hard, tough and strong, but is difficult to season and liable to check in drying. It has a high value as a fuel and is largely used in the manufacture of chairs, shoe-lasts, plane stocks, handles, etc. It commonly grows in rich soils and is often the prevailing tree over wide areas.

Flowers in April and May.

The range is so general that specific localities are omitted.

CASTANEA Adams.

C. DENTATA (Marsh.) Borkh. Chestnut.

(*C. sativa Americana* Wats. and Coult.)

Found abundantly in some of the southern counties, especially in the region of the Knobs where it sometimes forms large groves. More sparingly found in other parts of the State, in most of the latter cases as an escape. It is indicative when growing in numbers of rich soil. A tree from 80 to 100 feet in height and with a trunk diameter of from six to thirteen feet.

The wood is light and soft, not strong, but durable in contact with the soil; it checks and warps badly in drying. Commonly used in cabinet-making, fencing, posts and railway ties. Its chief value, perhaps, lies in its fruit. Cultivated quite largely in lawns and parks.

Flowers in June and July; fruit ripens in September and October.

Decatur (Ballard); Clark, Floyd, Harrison, Posey, Crawford, Gibson, and Knox.

C. PUMILA (L.) Mill. Chinquapin.

In the southwestern part of the State, usually in dry soil. Not of especial abundance. A shrub or small tree. I have seen no specimens, but material was determined by Professor Sargent, and also by Dr. Robert Ridgway.

Flowers in June; fruit ripens in September.

Knox and Gibson counties; "Valley of lower Wabash River, Indiana" (Sargent).

QUERCUS L.

Q. RUBRA L. Red Oak.

Well distributed through the timbered regions of the State, though reported as not common in the central eastern counties. A large tree ranging in height from 80 to 100 feet, with a trunk diameter of from three to seven feet; exceptionally larger.

The wood is coarse-grained, hard and strong. Used extensively for clapboards, cooperage, in the manufacture of cheap grades of furniture, and for inside finish.

Flowers in May and June; acorns ripe in September and October.

As its range practically covers the State, specific stations are omitted.

Q. PALUSTRIS Du Roi. Swamp Oak. Pin Oak.

Well distributed especially in the southern counties of the State, becoming less frequent toward the north. Usually found along the borders of streams or in swamps in rich soil. A tree in our area of from 80 to 100 feet in height and of a diameter ranging from three to five feet.

The wood is coarse grained, hard and very strong and is somewhat used for shingles, clapboards and in cooperage.

Flowers in May and June; acorns ripen in September and October.

Range general, limited as indicated above. According to Rev. E. J. Hill the northern limit of the species is the southern shore of Lake Michigan. (Bot. Gaz., Vol. 26, pp. 53-57.)

Q. TEXANA Buckley. Texan Red Oak.

A tree very similar to *Q. rubra* and *Q. palustris*, from which it is usually not separated. It is found in Gibson, Posey and Knox counties and probably extends farther northward along the Wabash River. In its maximum development it is much larger than either of the preceding species.

The wood is hard, heavy and strong and used for the same purposes as the preceding forms.

Flowers in April and May; fruit ripens in September and October.

The form was first detected in the State by Dr. J. Schneck.

Q. COCCINEA Wang. Scarlet Oak.

Found throughout the State, but in much greater development both as to size and number in the southern counties. Not frequent in the northern part of the State and wanting in certain of the central-eastern counties. In our area the species reaches a height of from 80 to 140 feet and a trunk diameter of from two to four feet.

The wood is not distinguished commercially from that of the red oak and is used for the same purposes.

Flowers in May and June; acorns ripen in September and October.

Range sufficiently indicated above.

Q. VELUTINA Lam. Black Oak. Yellow-barked Oak.

(*Q. coccinea tinctoria* Gray.)

More largely distributed than *Q. coccinea*, which it somewhat resembles. It usually grows on moist or dry uplands associated with red and white oaks, various hickories and maples. A tree of about the same size as the scarlet oak.

The wood is heavy and strong, but not tough. As is the case in the majority of oaks, it checks badly in drying. Used for cooperage and in construction. The bark is rich in tannin and is largely used in tanning; and the inner bark, which is extremely bitter, furnishes a valuable yellow dye.

Flowers in May and June; acorns ripen in September and October.

Range sufficiently indicated above.

Q. DIGITATA (Marsh) Sudw. Spanish Oak.

(*Q. falcata* Michx.)

General, but by no means abundant, in the southern counties. Usually found in dry, gravelly soils. A tree ranging from 80 to 100 feet in height, with a maximum trunk diameter of six feet.

Wood very hard and strong, but not durable. Used for cooperage and construction, but most largely for fuel. The bark is rich in tannin and is used for tanning.

Flowers in May and June; acorns ripen in September and October.

Range sufficiently indicated.

Q. MARYLANDICA Moench. Black-Jack Oak. Barren Oak.

(*Q. nigra* L?)

Found in barrens north and south, ordinarily in dry soil. A familiar tree, from 40 to 50 feet in height, and rarely exceeding two feet in diameter.

The wood is very hard and strong, but not durable, and checks badly in drying. Of little value except for fuel.

Flowers in May and June; acorns ripen in October and November.

Distribution sufficiently indicated.

Q. PHELLOS L. Willow Oak.

Rare in rich, sandy soils, in the southwestern counties. A tree from 60 to 80 feet high, with a trunk diameter of from two to three feet.

The wood is heavy and strong, but not hard. It is used somewhat for wheels, clapboards and in construction.

Flowers in April and May; acorns ripen in September and October.

Found in Gibson, Posey and Knox counties.

Q. IMBRICARIA Michx. Shingle Oak. Laurel Oak. Peach-leaved Oak.

A species easily distinguished from the fact that it is the only oak within our area with entire leaves. The leaves are shining, lanceolate in shape, and somewhat resemble those of the Peach. In Vigo County the species is most commonly known as "Jack Oak." It is fairly distributed throughout the State in rich soils. A tree from 80 to 100 feet high and from two to three feet in diameter.

The wood is heavy and hard, but checks badly in drying. Used for clapboards and shingles, and highly valued as a fuel.

Flowers in April and May; acorns ripen in September and October.

Range, general.

Q. ALBA L. White Oak.

Common throughout the timbered regions of the State, in many parts constituting the larger part of the forests. One of the most valuable forest trees yet remaining in any numbers. The largest specimens have, of course, been removed, but many of merchantable size remain. The tree reaches a height of from 80 to 100 feet and a trunk diameter of from three to seven feet.

The wood is strong, heavy, tough and durable in contact with the soil. It is, however, liable to check unless carefully seasoned. The species is of the highest economic value, the wood being used for almost every conceivable purpose from ship building to basket making. The value of the form is rapidly increasing, and they should be carefully conserved by the land owner.

Flowers in May and June; acorns ripen in September and October.
Distribution general.

Q. LYRATA Walt. Swamp, Overcup or Post Oak.

In swamps and along streams. "Common, locally, in Knox and Gibson counties. *Unquestionably* this species." (Ridgway.)

A tree from 80 to 100 feet in height, with a diameter of from two to three feet, often growing in deep, and often submerged swamps.

The wood is of the same general character and is used for the same purposes as the white oak.

Flowers in April and May; acorns ripen in September.
Distribution as indicated.

Q. MACROCARPA Michx. Bur Oak. Overcup or Mossy-cup Oak.

Common throughout the State in lands of fair quality. Readily recognized by its rough, thick and shaggy bark and its profuse branching. A large tree 80 to 100, exceptionally 150 feet high, with a diameter of from four to eight feet.

The wood is heavy, hard, strong, tough and more durable in contact with the soil than that of other American oaks. Usually confounded with the less valuable *Q. alba* and employed for the same purposes. Used locally to a considerable extent for wheel stock.

Flowers in May and June; acorns ripen in September and October.
Distribution general.

Q. MINOR (Marsh) Sarg. Post or Iron Oak.

(*Q. stellata* Wang.)

Not common, but found in dry, sandy soil in the southern and southwestern counties. A tree rarely exceeding 80 feet in height or a diameter of four feet.

The wood is not so tough as that of *Q. alba*, but otherwise of similar character. Largely used for fencing and railroad ties, less commonly for carriage stock and in cooperage. By some considered the most durable timber for posts, whence its common name.

Flowers in May and June; acorns ripen in September and October.

Distribution as indicated above.

• **Q. PLATANOIDES** (Lam.) Sudw. Swamp White Oak.

(*Q. bicolor* Willd.)

Well distributed in the State along the borders of streams and swamps, but not found in the central-eastern counties. A large tree, from 90 to 120 feet in height, with a trunk diameter of from four to eight feet.

The wood is heavy, hard, strong and tough, checking to some extent in drying. It is used for the same purposes as the white oak; locally to some extent for wheel stock.

Flowers in May and June; acorns ripen in September and October.

Distribution general in situations indicated.

Q. MICHAUXII Nutt. Basket Oak.

Found in low, wet alluvial soil, especially in the southwestern portion of the State. Dr. Ridgway reports it as common in Knox and Gibson counties; at times the prevailing species on limited areas. A tree about 100 feet high, with a trunk diameter ranging from four to seven feet.

The wood is easily split, very durable in contact with the soil, tough and strong. Used for agricultural implements, wheel stock, baskets, cooperage, fencing and construction. The large, sweet acorns are eagerly eaten by stock.

Flowers in April and May; fruit ripens in September and October.

Distribution as indicated above.

Q. PRINUS L. Rock Chestnut Oak.

This species was found by Miss Alida Cunningham in Tippecanoe County in 1896. The form was growing in dry soil, and the tree from which material was collected was about 80 feet in height, with a trunk diameter of a little more than two feet. So far as I am aware, the only record for the State.

Q. ACUMINATA (Michx.) Sarg. Yellow Oak. Chinquapin Oak.

(*Q. Muhlenbergii* Engelm.)

Well distributed throughout the State in rich soils. A tree from 80 to 100 feet in height, with a trunk diameter of from two to three feet. According to Mr. Blatchley, two marked varieties of the species occur in Vigo County. "In the one the leaves closely resemble those of the chestnut, being lanceolate, acuminate, sharply serrate, the veins very prominent; five and one-half inches long by one and three-fourths inches wide (average). In the other the

leaves are broadly ovate or obovate, seven inches long by five wide, the teeth rounded, the veins less prominent." The small acorns are sweet and edible.

The wood is very strong and durable in contact with the soil, but checks badly in drying. Used for cooperage, railroad ties, wheel-stock, fencing, etc.

Flowers in May and June; acorns ripen in October and November.

Range indicated.

ULMACEÆ. - Elm Family.

ULMUS L.

U. AMERICANA L. American or White Elm. Water Elm.

Generally distributed throughout the State, and found in soils of every character, though reaching its greatest development in low, rich woods and along streams. A tree from 90 to 110 feet high, with a trunk diameter at times as great as eight or nine feet.

The wood is hard to split, but is strong and tough. It is used extensively for wheel stocks, saddle trees, flooring, in cooperage, and is now being largely exported to England for use in boat and ship building. The form is one of our most desirable shade trees either for lawns or streets. Its only disadvantage is, perhaps, its liability to injury from insects.

Flowering season, March and April.

Distribution so general that specific stations are omitted.

U. RACEMOSA Thomas. Cork or Rock Elm. Hickory Elm.

The distribution of this form is rather peculiar, so far as reports indicate. It is abundant in Franklin County and along the banks of the Ohio as far west as Jefferson County, but is not reported from any of the southwestern counties. It is found plentifully in Noble County, but in the central-eastern counties between Noble and Franklin it is apparently wanting. Sparingly found in other counties, usually in rich soils, though growing well in low, wet clay. A large tree, 60 to 90 feet high, often two or three feet in diameter.

The wood is hard, tough and strong, and susceptible of a high polish. It is largely used in the manufacture of heavy agricultural implements, for railway ties, bridge timbers, sills, etc., and is a form of high economic value.

Flowers in April.

Distribution indicated above.

U. ALATA Michx. Winged Elm. Wahoo.

A small tree, found in the southern and southwestern counties, usually in moist soils along streams. Occasionally it occurs in dry uplands. It is ordinarily rather sparingly found, though quite frequent in Crawford and Harrison counties.

The wood is compact and unwedgable, and is largely used for hubs, blocks, etc.

Flowering season, March and April.

U. FULVA Michx. Slippery or Red Elm,

Generally but sparingly distributed throughout the State. More abundant apparently in the southeastern counties than in other parts of the State. A tree, in our area, from 45 to 60 feet high and with a trunk diameter of from one and one-half to two feet.

Its wood is close-grained, compact and strong, and durable in contact with the soil. It splits readily when green. Largely used for wheel-stock, fence-posts, rails, railway ties, sills, etc. An infusion of the inner bark is a favorite household remedy. It grows most plentifully on the borders of streams and on hillsides in rich soils.

Flowers in March and April.

Distribution general.

PLANERA. J. F. Gmel.**P. AQUATICA (Walt.) J. F. Gmel.** Water Elm.

In swamps and other extremely wet places in the central and southern parts of the State, but always in sparing numbers. It is not reported as occurring north of Putnam County. A small tree in our area, rarely exceeding 30 feet in height, with a trunk diameter of from one to one and one-half feet.

The wood is soft and weak and of no special economic value.

Flowering season, April and May.

Distribution indicated above.

CELTIS L.**C. OCCIDENTALIS L.** Hackberry. Sugarberry.

Common throughout most of the State, but sparingly found in the central-eastern counties, and reduced in size in the northern counties. It is ordinarily found in open woods in dry soils, and particularly affects upper river terraces. A tree from 60 to 90 feet high, though exceptionally found from 110 to 115 feet (Ridgway), with a trunk diameter of from two to five feet.

The wood, while heavy, is soft and weak, and takes a fairly good polish. Used very largely for fencing and occasionally in the manufacture of cheaper grades of furniture.

Flowers in April and May.

Distribution indicated above.

C. MISSISSIPPIENSIS Bosc. Southern Hackberry.

A tree less common than the former and found in much more restricted area, being confined to the southern and southwestern counties. It is a tree similar to the preceding, though usually somewhat smaller. It is found in dry soil and seems to intergrade with *C. occidentalis* L.

The wood is of the same character and is used for the same purposes.

Flowers in April and May.

Distribution as indicated.

MORACEÆ. Mulberry Family.

MORUS L.

M. RUBRA L. Red Mulberry.

Generally distributed throughout the State, but not abundant in any locality. A tree from 50 to 60 feet high, with a trunk diameter of from three to five feet. It is generally found in rich bottom lands, though growing in reduced size in other locations.

The wood is not strong, but is rather tough and compact and of great durability in contact with the soil. It is largely used in fencing, cooperage and for snaths; in the South it is largely employed in boat and ship building.

Flowers in April and May; fruit ripening in June and July.

• No better form could be planted to retain the birds in any given area.

Distribution as indicated.

M. ALBA L. White Mulberry.

Escaped from cultivation in the southern counties. Years ago large orchards of this species were planted in various southern counties for feeding silkworms. The industry did not thrive, but the trees have maintained themselves and have spread somewhat freely from their original stations.

Flowers in May; fruit ripens in July.

Found in all the southern counties to a greater or less extent and reported as far north as Putnam.

TOXYLON Raf.

T. POMIFERUM Raf. Osage Orange.

(Maclura aurantiaca Nutt.)

Used largely throughout the State for hedges and wind breaks and sparingly escaped in various counties. In our area the form rarely exceeds 30 or 40 feet in height and a trunk diameter of from one to one and one-half feet. It establishes itself strongly in rich soil, but becomes a straggling shrub in light thin soils.

The wood is hard, very strong, dense and durable.

Flowers in May and June; fruit ripens in October and November.

Tippecanoe (Thompson); Decatur (Ballard); Vigo (Blatchley); Jefferson (J. M. Coulter); Kosciusko (Coulter); Hamilton (Wilson).

HUMULUS L.

H. LUPULUS L. Hop.

Escaped from cultivation somewhat extensively in various parts of the State. Usually found in thickets along the banks of streams.

Flowers in June and July; fruit matures in September and October.

Tippecanoe (Cunningham); Vigo (Blatchley); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (Barnes); Hamilton (Wilson); Steuben (Bradner).

CANNABIS L.

C. SATIVA L. Hemp.

In waste, rather dry places, in various counties. Abundant in places, but rarely troublesome. Of much wider range than citations indicate.

Flowers from July until September.

Tippecanoe (Cunningham); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Jefferson (Barnes); Kosciusko (Coulter); Clark (Baird and Taylor); Hamilton and Marion (Wilson); Steuben (Bradner).

URTICACEÆ. Nettle Family.

URTICA L.

U. DIOICA L. Stinging or Great Nettle.

Rare, in waste places and by roadsides.

Flowers from July until September.

Marion.

U. GRACILIS Ait. Slender Nettle.

Found in various parts of the State growing in dry soil. Stinging hairs few in number.

Flowers from June through October.

Hamilton and Marion (Wilson); Fayette (Hessler); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (Barnes); Kosciusko and Tippecanoe (Coulter); Steuben (Bradner).

URTICASTRUM Fabr.**U. DIVARICATUM (L.) Kuntze. Wood Nettle.**

(*Laportea Canadensis* Gaud.)

Throughout the State in rich soils, in moist, shaded places. Sometimes very abundant in low, dense woods. Thickly clothed with stinging hairs.

Flowers from July until September.

Hamilton and Marion (Wilson); Tippecanoe (Cunningham); Daviess (Clements); Fayette (Hessler); Putnam (MacDougall); Vigo (Blatchley); Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Kosciusko (Coulter); Steuben (Bradner).

ADICEA Raf.**A. PUMILA (L.) Raf. Clear Weed. Rich Weed.**

(*Pilea pumila* Gray.)

In all parts of the State, in shaded, rich soil, sometimes becoming annoying in lawns. It is usually abundant in its stations.

Flowers from July through September.

Hamilton (Wilson); Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougall); Fayette (Hessler); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Kosciusko (Coulter); Steuben (Bradner).

BOEHMERIA Jacq.**B. CYLINDRICA (L.) Willd. False Nettle.**

Throughout the State somewhat abundantly, growing in low, moist woods and on the borders of swamps.

Flowers from July until September.

Hamilton (Wilson); Daviess (Clements); Wayne (Plummer); Fayette (Hessler); Putnam (MacDougall); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Kosciusko (Coulter); Tippecanoe (Hussey); Steuben (Bradner).

PARIETARIA L.

P. PENNSYLVANICA Muhl.

On shaded banks or in dry rocky places in various counties of the State. Of frequent occurrence, but nowhere abundant.

Flowers from June through August.

Daviess (Clements); Kosciusko (Chipman); Jefferson (Barnes); Hamilton and Marion (Wilson); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Coulter).

LORANTHACEÆ. Mistletoe Family.

PHORADENDRON Nutt.

P. FLAVESCENS (Pursh) Nutt. American Mistletoe.

Plentiful, especially in the southern part of the State, where it is parasitic on various deciduous trees. In our area it is found most frequently on the American Elm, Honey Locust and White Oak, in the order named. Farther south it is most frequently found on the Sycamore. I have never seen it in Indiana on either the Tulip Tree or Red Maple. Rapidly disappearing because of being gathered as a Christmas green.

Flowers in April; white berries still plump and smooth at Christmas.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (Barnes); Floyd (Clapp); Franklin (Meyneke); Dearborn (Collins); Bartholomew (Barnes); Crawford and Harrison.

SANTALACEÆ. Sandalwood Family.

COMANDRA Nutt.

C. UMBELLATA (L.) Nutt. Bastard Toad-flax.

General, in dry, sandy soil, in fields and thickets. It is frequently abundantly found in dry, virgin soils and upon exposed embankments.

Flowers from April through July.

Daviess (Clements); Cass (Hessler); Jefferson (Barnes); Franklin (Meyneke); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Gibson (Schneck); St. Joseph (Rothert); Monroe and Vigo (Blatchley); Kosciusko (Coulter); Clark (Baird and Taylor); Steuben (Bradner); Tippecanoe.

ARISTOLOCHIACEÆ. Birthwort Family.

ASARUM L.

A. CANADENSE L. Wild Ginger. Colt's Foot.

Common throughout the State in shaded, hilly, rich woods, or along protected slopes. Usually in moist soil. An easily recognized form because of its handsome, heart-shaped leaves, brownish-purple flower, and the ginger flavor of its root.

Flowers in April and May.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Franklin (Meyneke); Putnam (MacDougall); Fayette (Hessler); Vigo (Blatchley); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

ARISTOLOCHIA L.

A. SERPENTARIA L. Virginia Snake-root.

Found throughout the State growing in loose, rich soil. Usually common in its stations.

Flowers in May and June.

Tippecanoe (Cunningham); Crawford (Barnes); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Fayette (Hessler); Jefferson and Marion; Steuben (Bradner); Monroe (Blatchley).

A. TOMENTOSA Sims. Pipe Vine.

A distinctly southern form which has found its way into the flora of our southwestern counties. It is a twining vine, growing on rich river banks in considerable profusion in the regions indicated.

Flowers in May and June.

Gibson and Posey (Schneck); Knox (Wright).

POLYGONACEÆ. Buckwheat Family.

RUMEX L.

R. ACETOSELLA L. Field or Sheep Sorrel.

Abundant throughout the State in barren or poor soil by roadsides and in old fields. In many parts of the State it has become a troublesome weed, taking complete possession of pasture lands and meadows. Very difficult to eradicate. Foliage very acid.

Flowers from May through September.

Tippecanoe (Cunningham); Daviess (Clements); Noble (Van Gorder); Dearborn (Collins); Gibson and Posey (Schneck); Franklin (Meyncke); Vermillion (Wright); Jefferson (J. M. Coulter); Putnam (MacDougal); Clark (Baird and Taylor); Fayette (Hessler); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

R. VERTICILLATUS L. Swamp Dock.

In many parts of the State in wet soils, swamps and by the borders of marshes. Frequent in the stations in which it is found.

Flowers in May and June.

Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Cedar Lake (Deam); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson).

R. ALTISSIMUS Wood. Tall or Peach-leaved Dock.

Somewhat abundant in the central and southern counties of the State along streams and on the borders of ponds and ditches.

Flowers from April to June.

Jay, Delaware, Randolph and Wayne (Phinney); Dearborn (Collins); Fayette (Hessler); Vigo (Blatchley).

R. BRITANNICA L. Great Water Dock.

In many counties of the State in wet soils, along streams or in marshes. Abundant in the stations in which it is found.

Flowers in July and August.

Daviess (Clements); Tippecanoe (Hussey); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Steuben (Bradner).

R. CRISPUS L. Curled Dock.

Common in all parts of the State, growing in waste and cultivated fields.

A troublesome and very persistent weed.

Flowers from May until August.

Tippecanoe (Cunningham); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler); Putnam (MacDougal); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

R. CONGLOMERATUS Murr. Clustered or Smaller Green Dock.

In southern part of the State in waste places.

Flowers in May and July.

Jefferson.

R. SANGUINEUS L. Bloody or Red-veined Dock.

Rare, in waste places.

Flowers from May until August.

Gibson.

R. OBTUSIFOLIUS L. Bitter Dock.

Found throughout the State growing by roadsides and in waste places. Soon becoming plentiful where it obtains a foothold.

Flowers in June and July.

Tippecanoe (Cunningham); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meyneke); Clark (Baird and Taylor); Dearborn (Collins); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougall); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

R. PERSICARIOIDES L. Golden Dock.

In sandy places. Reported but from one county.

Flowers from July to October.

Marion.

FAGOPYRUM Gaertn.**F. FAGOPYRUM (L.) Karst. Buckwheat.**

(*F. esculentum* Moench.)

In the borders of old fields and along roadsides in various parts of the State. It not only escapes from cultivation but is persistent after cultivation. Nowhere very abundant, but holding its own where it has obtained a foothold.

Flowers from June through August.

Franklin (Meyneke); Clark (Baird and Taylor); Noble (Van Gorder); Jefferson (Barnes); Gibson and Posey (Schneck); Vigo (Blatchley); Hamilton and Marion (Wilson).

POLYGONUM L.**P. AMPHIBIUM L. Water Smartweed.**

In many parts of the State in the shallow waters of ponds and lakes and sluggish streams. Common in the stations in which it is found.

Flowers in July and August.

Tippecanoe (Cunningham); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Vigo (Blatchley); Steuben (Bradner).

P. HARTWRIGHTII Gray. Hartwright's Persicaria.

In swamps and moist soil in northern part of the State.

Flowers from June until August.

Steuben (Bradner).

P. EMERSUM (Michx.) Britton. Swamp Smartweed.

(*P. Muhlenbergii* Watson.)

Abundant in the low lands about lakes and in swamps. Grows most vigorously in rich, sandy loams at the margins of ponds and marshes. Often confused with the preceding, which it greatly resembles.

Flowers from June until September.

Tippecanoe (Cunningham); Vigo (Blatchley); Kosciusko (Coulter); Lake; Hamilton (Wilson); Steuben (Bradner).

P. INCARNATUM Ell. Slender Pink Smartweed.

In wet soil throughout the State. Found in almost every collection, referred to *P. Pennsylvanicum*, from which it should be easily separated by the shape of the flowering spike and the absence of glands upon the peduncles and pedicels.

Flowers in June, continuing until late in September.

Fayette (Hessler); Round Lake (Deam); Putnam (MacDougal); Tippecanoe (Wright); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

P. LAPATHIFOLIUM L. Dock-leaved Smartweed.

Also widely distributed throughout the State, frequenting waste places in relatively dry soil. Confused in many collections with *P. Pennsylvanicum*. The varieties *nodosum* and *incana* are probably also found, but their intergrading with the type makes their separation extremely difficult.

Flowers from June until September.

Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Tippecanoe and Kosciusko (Coulter).

P. PENNSYLVANICUM L.

Very abundant in moist, even wet, rich soils in all parts of the State. Very variable as to size. In the rich muck soils, near the borders of some of our northern lakes, specimens have been collected over six feet in height, with widely spreading branches. Forms from four to five feet in height are not exceptional in such situations. The stems also become very hard and woody under such conditions, and the flowering spikes from two to four inches long.

Flowers from July until in October.

Tippecanoe (Cunningham); Daviess (Clement); Gibson and Posey (Schneck); Franklin (Meyneke); Noble (Van Gorder); Vermillion (Wright); Clark (Baird and Taylor); Jefferson (Barnes); Putnam (MacDougal); Hamilton (Wilson); Fayette (Hessler); Vigo (Blatchley); Kosciusko (Coulter); Steuben (Bradner).

P. PERSICARIA L. Lady's Thumb.

Frequent in waste places, usually in moist soils, in many parts of the State. In many cases it has become an annoying weed through its invasion of cultivated fields.

Flowers from June until the frosts.

Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyneke); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

P. CAREYI Olney.

In swamps and marshes in a few localities in the northern counties. Nowhere abundant but not infrequent in the regions mentioned. First reported by Mr. W. B. Van Gorder.

Flowers in August and September.

Noble (Van Gorder); Kosciusko (Coulter); Marion.

P. HYDROPIPEROIDES Michx. Mild Smartweed.

In marshes and the shallow water of ponds and lakes and also on muddy shores, in many counties of the State. Common wherever found.

Flowers from June until September.

Tippecanoe (Cunningham); Jay, Delaware, Randolph and Wayne (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Franklin (Meyneke); Clark (Baird and Taylor); Noble (Van Gorder); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. HYDROPIPER L. Smartweed. Water Pepper.

In wet, rich soils and along ditches and borders of ponds, in all parts of the State. Abundant in all of its stations.

Flowers from July until in October.

Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Decatur and Shelby (Ballard); Putnam (MacDougal); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. PUNCTATUM Ell. Water Smartweed.

(*P. acre* H. B. K.)

Widely distributed throughout the State in moist soils, chiefly in swamps and low grounds along waterways. Absent from extreme northern counties of the State.

Flowers from June until the heavy frosts.

Jay, Delaware, Randolph and Wayne (Phinney); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Round Lake (Deam); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. ORIENTALE L. Prince's Feather.

In waste places about dwellings and along roadsides in many counties. The species has largely escaped from cultivation and maintains itself well, in some counties largely spreading.

Flowers in August and September.

Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Fayette (Hessler); Hamilton (Wilson); Steuben (Bradner); Gibson and Marion.

P. VIRGINIANUM L. Virginia Knotweed.

In heavily shaded places in damp, rich soil. Especially abundant in the heavy thickets of the undrained bottom lands about the margins of lakes. An easily recognized form.

Flowers from July through October.

Daviess (Clements); Gibson and Posey (Schneck); Jefferson (Barnes); Putnam (MacDougal); Noble (Van Gorder); Franklin (Meyncke); Fayette (Hessler); Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

P. AVICULARE L. Knot-grass. Doorweed.

A troublesome weed in lawns and along paths. Growing also abundantly along roadsides and in waste places, usually in dry, rather compact soil. Common in all parts of the State.

Flowers from June until November.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Knox (Spillman); Fayette (Hessler); Vigo (Blatchley); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

P. ERECTUM L. Erect Knot-grass.

Widely distributed throughout the State, but not so abundant as the preceding. It grows about yards and along roadways, but is more abundant in moist, rather rich soils.

Flowers from July through September.

Tippecanoe (Cunningham); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Vermillion (Wright); Gibson and Posey (Schneck); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. RAMOSISSIMUM Michx. Bushy Knotweed.

In low, sandy soils in a few counties of the State. The northern station along the shore of Lake Michigan is a fairly natural one. It is barely possible that the plants from the southern station should be referred to the western form, *P. ramosissimum prolificum* Small.

Flowering in July and August.

Vigo (Blatchley); Lake (Hill); Porter (Cowles).

P. TENUE Michx. Slender Knotweed.

In rich, loose, dry soil in a few counties of the State, but nowhere abundant. Chiefly northern in its range in our territory.

Flowers from July through September.

Tippecanoe (Coulter); Lake (Hill); Vigo (Blatchley); Porter (Cowles).

P. CONVOLVULUS L. Black Bindweed.

In all parts of the State in waste places and cultivated fields. In some few localities, where the soil is a rich, sandy loam, it has become a troublesome weed. Usually trailing, though frequently twining about low shrubs or fallen branches.

Flowers from June until September.

Tippecanoe (Cunningham); Jay, Delaware, Randolph and Wayne (Phinney); Putnam (MacDougal); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Kosciusko (Chipman); Vigo (Blatchley); Steuben (Bradner); Marion (Moffatt).

P. SCANDENS L. Climbing False Buckwheat.

(*P. dumetorum scandens* Gray.)

Abundant in all parts of the State, growing in moist woods and thickets. It covers bushes, brush heaps and fences in its vigorous growth in favorable localities. The vines frequently exceed 20 feet in length.

Flowers from July through September.

Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (Barnes); Franklin (Meyneke); Putnam (MacDougal); Gibson and Posey (Schneck); Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

P. DUMETORUM L. Hedge Buckwheat.

This western form has entered the State along the line of east and west railways. Frequently not separated from the preceding, which it resembles.

Flowers from July to September.

Fayette (Hessler); Putnam (MacDougal); Hamilton and Marion (Wilson).

P. SAGITTATUM L. Arrow-leaved Tear-Thumb.

Widely distributed and very abundant, growing in low, wet places in rich soils. Either decumbent or climbing over other plants by the strong recurved prickles which arm the angles of the stem.

Flowers from July through September.

Tippecanoe (Cunningham); Cass (Hessler); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Vermillion (Wright); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyneke); Cedar Lake (Deam); Knox (Spillman); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. ARIFOLIUM L. Halberd-leaved Tear-Thumb.

First reported as occurring in the State by Mr. W. S. Blatchley. It grows in moist soils in ravines and along the borders of streams or marshes. Stem habit similar to the preceding, but the plant easily distinguishable because of its halberd-shaped leaves.

Vigo (Blatchley); Noble (Van Gorder); Clark (Baird and Taylor); Putnam (MacDougal); Steuben (Bradner).

POLYGONELLA Michx.**P. ARTICULATA (L.) Meisn. Coast Jointweed.**

Along the shores of Lake Michigan as a constituent member of the dune flora. The citation from Clark County by Baird and Taylor in their catalogue is doubtless an error.

Flowers July through September.

Lake (Hill); Porter (Cowles).

CHENOPODIACEÆ. Goosefoot Family.**CHENOPODIUM L.****C. ALBUM L. Pigweed. Lamb's Quarters. White Goosefoot.**

Abundant in all parts of the State in waste and cultivated grounds. A common and annoying weed in many places.

Flowering season from June until September.

Tippecanoe (Cunningham); Daviess (Clements); Jay, Delaware, Randolph and Wayne (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyneke); Putnam (MacDougal); Hamilton and Marion (Wilson); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ALBUM VIRIDE (L.) Moq.

Occurring in similar localities as the type, from which it is scarcely distinguishable in many instances. Generally confused in local collections with *C. album*.

Flowers from June until September.

Putnam (MacDougal); Fayette (Hessler); Hamilton and Marion (Wilson); Tippecanoe (Coulter); Gibson (Schneck).

C. BOSCIANUM Moq.

In dry, sandy soil in open places, and also in woods and thickets. Not of especial abundance in any of its localities, but probably of wider range than the citations indicate.

Flowers from July until in September.

Vigo (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Tippecanoe (Coulter).

C. URBICUM L. Common or City Goosefoot.

Common in a few counties of the State, growing in waste places and along streets. Probably of much wider distribution than the references indicate.

Flowering season, June until September.

Clark (Baird and Taylor); Vigo (Blatchley); Marion; Steuben (Bradner); Tippecanoe.

C. HYBRIDUM L. Maple-leaved Goosefoot.

Abundant and widely distributed in the State, growing in woods and thickets and at the borders of cultivated fields.

Flowers from June until September.

Clark (Baird and Taylor); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Kosciusko (Chipman); Vigo (Blatchley); Tippecanoe (Coulter); Marion; Steuben (Bradner).

C. BOTRYS L. Feather Geranium. Jerusalem Oak.

A common form, in many parts of the State growing in waste places and along the banks of waterways. "The leaves fall in the autumn, leaving the panicles as naked, narrow wands" (Britton and Brown).

Flowers from June until September.

Jefferson (Barnes); Franklin (Meyncke); Fayette (Hessler); Vigo (Blatchley); Tippecanoe (Coulter); Montgomery; Hamilton and Marion (Wilson); Steuben (Bradner).

C. AMBROSIODES L. Mexican Tea.

Confined apparently to the southern counties of the State, where it is quite common in waste places and in towns along streets and alleys.

Flowers from July through September.

Clark (Baird and Taylor); Jefferson (Barnes); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley).

C. ANTHELMINTICUM L. Wormseed.

(*C. ambrosioides anthelminticum* Gray.)

Reported chiefly from the southern counties, but there quite abundant in waste places and about streets in towns. It is of less common occurrence than the preceding, with which it is often confused in local collections.

Flowers from July until October.

Clark (Baird and Taylor); Gibson and Posey (Schneck); Jefferson (Barnes); Vigo (Blatchley); Steuben (Bradner).

BLITUM L.**B. CAPITATUM L. Strawberry Blite.**

Occurs in dry soil in the northern counties.

Flowers from June to August.

Steuben (Bradner).

CORISPERMUM L.**C. HYSSOPIFOLIUM L. Bug-seed.**

Found only on the southern shore of Lake Michigan, where it is a character plant of the middle beach.

Flowers in August and September.

Lake (Hill); Porter (Cowles).

SALSOLA L.**S. TRAGUS L. Russian Thistle.**

(*S. Kali Tragus* Moq.)

This much dreaded weed has spread but little within our boundary since it obtained a footing some ten years ago. It is quite abundant in the northwestern corner of the State in the neighborhood of Chicago, where there is much uncultivated land. In the other counties in which it appeared, where the tillage of the soil is much closer, it has made no noticeable gain. The prompt recognition of its dangerous character doubtless served in a large measure to prevent its spread. While a certain amount of care will be needed for some time to come, the danger point, so far as this species is concerned, has passed.

Flowers from July until September.

Lake (Hill); Noble (Van Gorder); Wabash (Jenkins).

AMARANTHACEÆ. Amaranth Family.

AMARANTHUS L.

A. RETROFLEXUS L. Rough Pigweed.

Abundant throughout the State in waste places and cultivated fields. An annoying weed in many places, but yielding to careful cultivation of the soil.

Flowers from July until October.

Tippecanoe (Cunningham); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Franklin (Meyncke); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

A. HYBRIDUS L. Slender Pigweed.

(*A. hypochondriacus* L.)

In the central and northern parts of the State, occurring quite plentifully in waste places. It is often confused with the preceding species in local collections.

Flowering in August and September.

Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Fayette (Hessler); Tippecanoe (Coulter); Marion and Hamilton (Wilson); Steuben (Bradner).

A. HYBRIDUS PANICULATUS (L.) Uline and Bray.

(*A. paniculatus* L.)

Of similar range as the preceding, and in our area more abundant. It more frequently invades cultivated fields and is in consequence a more troublesome weed.

Flowers in August and September.

Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Kosciusko (Chipman); Vigo (Blatchley); Marion; Steuben (Bradner).

A. SPINOSUS L. Spiny Amaranth.

Confined apparently to the southern part of the State, where it is quite common in waste places and along roadsides. A very familiar form in the commons and vacant lots of towns. In some places an exceptionally troublesome weed.

Flowering season from June until late in September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Daviess (Clements); Vigo (Blatchley); Hamilton and Marion (Wilson).

A. BLITOIDES S. Wats. Prostrate Amaranth.

In the northern part of the State, found almost exclusively along railways. The form often covers large areas.

Flowering season from June until October.

Round Lake (Deam); Lake and Porter (Hill); Hamilton and Marion (Wilson).

A. GRAECIZANS L. Tumbleweed. White Amaranth.

(*A. album* L.)

Widely distributed throughout the State and abundant wherever found. In waste places and cultivated fields. An exceedingly troublesome weed.

Flowers from June until October.

Jasper (Barnes); Kosciusko (Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Daviess (Clements); Tippecanoe (Cunningham); Vigo (Blatchley); Steuben (Bradner); Marion (Moffat); Jefferson.

ACNIDA L.

A. TAMARISCINA (Nutt.) Wood. Water Hemp.

(*A. tuberculata* Moq.)

In various counties of the State, chiefly southern, in wet, sandy and gravelly banks. Rather common in stations in which it occurs.

Flowers in July and August.

Tippecanoe (Cunningham); Vigo (Blatchley); Clark (Baird and Taylor); Gibson and Posey (Schneck); Fayette (Hessler).

A. TAMARISCINA TUBERCVLATA (Moq.) Uline and Bray.

(*A. tuberculata subnuda* Wats.)

The borders of ponds in wet, sandy soils. Not as a rule separated from the preceding.

Flowers in July and August.

Vigo (Blatchley).

A. TAMARISCINA CONCATENATA (Moq.) Uline and Bray.

Also occurs in our area, but not ordinarily separated from the type. In drier soils.

Flowering in July and August.

Fayette (Hessler).

IRECINE P. Br.**I. PANICULATA** (L.) Kuntze. Blood-leaf.

In the southern counties, growing in dry soil. Quite frequent in the stations in which it occurs.

Flowers in August and September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Floyd (Clapp).

PHYTOLACCACEÆ. Pokeweed Family.**PHYTOLACCA L.****P. DECANDRA L. Pokeweed. Pokeberry.**

A well-known tall herb of general occurrence throughout the State. The plant has a strong, unpleasant odor and the large root is poisonous. The early leaves are sometimes used for "greens."

Flowers from June until September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (Barnes); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Floyd (Danser); Hamilton and Marion (Wilson); Steuben (Bradner).

NYCTAGINACEÆ. Four-o'clock Family.**ALLIONIA Loebl.****A. NYCTAGINEA Michx.** Heart-leaved Umbrellawort.

In central counties, growing in dry soil. First recognized as a member of the State flora by Dr. L. M. Underwood, formerly of DePauw University.

Flowers from June until August.

Hamilton (Wilson); Putnam (Underwood).

AIZOACEÆ. Carpet-weed Family.

MOLLUGO L.

M. VERTICILLATA L. Carpet Weed.

In many counties of the State, and abundant wherever found. Frequent in bare, sandy places and in cultivated fields. In some localities an annoying weed.

Flowers from May until after the heaviest frosts.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Hamilton and Marion (Wilson); Steuben (Bradner).

PORTULACACEÆ. Purslane Family.

TALINUM Adans.

T. TERETIFOLIUM Pursh. Fame-flower.

From Lake County upon the authority of Rev. E. J. Hill. The distribution of the plant is such that it may be looked for in other parts of the State. It is usually found growing on dry rocks.

Flowering season from May until September.

CLAYTONIA L.

C. VIRGINICA L. Spring Beauty.

Very abundant throughout the State, usually in moist, rich soils in woods and ravines. An extremely variable form, both as to color and markings of flowers and breadth of leaves. Various forms labelled *C. Caroliniana* have been referred to this species.

Flowers from early in March until in May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Chipman); Daviess (Clements); Decatur and Shelby (Ballard); Knox (Spillman); Hamilton and Marion (Wilson).

C. CAROLINIANA Michx.

In my judgment this species does not occur within our area. It has been reported from the southern counties by various botanists, who certify to its occurrence associated with the preceding species. It is therefore admitted tentatively.

Flowering season from March until April.

Distribution not given specifically, being noted merely as "occurring in southern counties."

PORTULACA L.

P. OLERACEA L. Purslane. Hog-weed.

Common in the southern counties of the State in gardens and cultivated grounds, often becoming a very annoying and persistent weed. Well known in the regions in which it is found.

Flowers from May until September.

Monroe and Vigo (Blatchley); Fayette (Hessler); Gibson and Posey (Schneck); Putnam (MacDougal); Hamilton and Marion (Wilson); Steuben (Bradner).

P. GRANDIFLORA Hook. Sun-plant.

Escaped from gardens in various parts of the State. Found usually in waste places near old gardens.

Flowering season from June until September.

CARYOPHYLLACEÆ. Pink Family.

AGROSTEMMA L.

A. GITHAGO L. Corn Cockle. Corn Champion.

(*Lychnis Githago* Scop.)

A very troublesome weed in cultivated fields, especially among cereals. Entirely too common in most parts of the State. Also found along railways.

Flowers from July until September.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Daviess (Clements); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Vermillion (Wright); Fayette (Hessler); Monroe and Vigo (Blatchley); Decatur and Shelby (Ballard); St. Joseph (Rothert); Hamilton and Marion (Wilson); Steuben (Bradner).

SILENE L.

S. STELLATA (L.) Ait. Starry Champion.

In woods and ravines or other shady places, also occurring sparingly in open fields. It is most abundant in sandy soils in damp places. More abundant in the northern counties of the State.

Flowering season from June until August.

Laporte (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougall); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Vermillion (Wright); Round Lake (Deam); Hamilton and Marion (Wilson); Steuben (Bradner).

S. ALBA Muhl. White Campion.

(*S. nivea* Otth.)

In shaded, moist places or along railroads in the southern counties. Not abundant in any of its stations.

Flowering in June and July.

Putnam and Vigo (Blatchley); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Fayette (Hessler); Putnam; Hamilton and Marion (Wilson); Carroll.

S. VIRGINICA L. Fire Pink.

Frequent in shaded ravines and damp woods in most parts of the State. Rarely found in dry soils.

Flowers from April until September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougall); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Vermillion (Wright); Monroe and Vigo (Blatchley); Fayette (Hessler); Decatur (Ballard); Hamilton and Marion (Wilson).

S. REGIA Sims. Royal Catchfly.

Only occasionally found in a few counties of the State. It is found on the borders of prairies or open stretches in dry, rather sandy soil.

Flowers collected in June.

Vigo (Blatchley); Wayne (Phinney); Hamilton (Wilson); Gibson.

S. CAROLINIANA Walt. Wild Pink.

(*S. Pennsylvanica* Michx.)

In various parts of the State, growing in dry, sandy or rocky soil. Not uncommon but abundant in none of its stations.

Flowers from April through June.

Tippecanoe and Jefferson.

S. ANTIRRHINA L. Sleepy Catchfly.

Common throughout the southern part of the State, less common in the northern. It grows in waste places in rather poor soils, and is also of frequent occurrence in fields among cereals.

Flowers from April until September.

Monroe and Vigo (Blatchley); Fayette (Hessler); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (Barnes); Tippecanoe (Cunningham); Daviess (Clements); Knox (Spillman); Hamilton and Marion (Wilson).

S. ARMERIA L. Sweet William.

In waste places in southwestern counties, probably as an escape from gardens. Found in waste places and abandoned gardens.

Flowering in June and July.

Gibson and Posey (Schneck).

S. NOCTIFLORA L. Night-flowering Catchfly.

In waste places in rather dry, sandy soils in a few counties. The flowers open at twilight, remain open through the night and are closed through the day. Its name arises from this habit.

Flowers from late in July until late in September.

Jefferson (Barnes); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Steuben (Bradner).

LYCHNIS L.**L. ALBA Mill. White Campion.**

(*L. vespertina* Sibth.)

Reported definitely but from one locality, in dry, rather coarse soil. The plants had been determined as *Silene noctiflora*, but a re-examination showed the five styles of *Lychnis*. It probably will be found in many counties.

Collected in flower July 29.

Tippecanoe (Cunningham).

SAPONARIA L.**S. OFFICINALIS L. Bouncing Bet. Hedge Pink.**

Commonly escaped throughout the State, growing in waste places and along roadsides. Frequently the prevailing plant over wide areas. In some instances it has become an annoying weed. Usually in sandy soils.

Flowering from June through September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

VACCARIA Medic.

V. VACCARIA (L.) Britton. Cow Weed.

(*Saponaria Vaccaria* L.)

In sandy, waste places and along roadsides in the central part of the State.

Flowers from June through August.

Putnam (MacDougal); Tippecanoe (Laben and Conner); Fayette and Marion (Hessler); Jefferson and Lake.

ALSINE L.

A. MEDIA L. Common Chickweed.

(*Stellaria media* Cyr.)

Abundant throughout the State, usually growing in rich, damp soils. Occasionally annoying in lawns.

Flowering begins late in March or early in April and continues until September.

Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Kosciusko (Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

A. PUBERA (Michx.) Britton. Great Chickweed.

(*Stellaria pubera* Michx.)

Open woods in rich, damp soils, common in southern and central counties, becoming less frequent farther north.

Flowers from April through June.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Fayette (Hessler); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

A. LONGIFOLIA (Muhl.) Britton. Long-leaved Starwort or Chickweed.
(*Stellaria longifolia* Muhl.)

In rather wet soils, in low grassy places near streams and open woods, in many counties of the State.

Flowers from April through June.

Kosciusko (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Clark (Baird and Taylor); Hamilton (Wilson); Steuben (Bradner).

A. LONGIPES (Goldie) Coville. Long-stalked Chickweed.
(*Stellaria longipes* Goldie.)

In moist soils of open places and borders of marshes in a few counties. Not common.

Flowers in May and June.

Vigo (Blatchley); Noble (Van Gorder); St. Joseph (Rothert); Tippecanoe.

CERASTIUM L.

C. VISCOSUM L. Mouse-ear Chickweed.

Very common about fields and waste places, frequently in grassy places. Found throughout the State.

Flowering season from April through July.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Randolph (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Clark (Baird and Taylor); Fayette (Hessler); Monroe and Vigo (Blatchley); Knox (Spillman); Steuben (Bradner).

C. VULGATUM L. Larger Mouse-ear Chickweed.

Frequent in open woods, meadows and waste places in the State. In the southern counties it sometimes becomes a troublesome weed. In the northern counties it is much less frequent and from the extreme north seems entirely absent.

Flowering from April until September.

Putnam (MacDougal); Vigo and Monroe (Blatchley); Jefferson (Barnes); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Decatur (Ballard); Knox (Spillman); Hamilton and Marion (Wilson).

C. LONGIPEDUNCULATUM Muhl. Nodding Chickweed.

(*C. nutans* Raf.)

One of the most common and widely distributed species of the genus. Found in fields and pastures in moist, grassy or shaded places.

Flowering from April through June.

Tippecanoe (Ives); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Fayette (Hessler); Knox (Spillman); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ARVENSE L. Field Chickweed.

Not at all frequent, but found in the eastern part of the State in coarse, rocky soil.

Flowering specimens collected May 17.

Franklin (Meyneke).

C. ARVENSE OBLONGIFOLIUM (Torr.) Holl. and Britt.

Somewhat common in various parts of the State, especially abundant along the upper Wabash valley in limestone soils.

Flowering from April through May.

Cass (Hessler); Daviess (Clements); Gibson and Posey (Schneck); Tippecanoe.

SAGINA L.**S. APETALA Ard. Small-flowered Pearlwort.**

Found sparingly in a few counties in the southern and eastern counties growing in dry soils in shaded places.

Flowers in June.

Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Monroe (Dudley).

S. DECUMBENS (Ell.) T. and G. Decumbent Pearlwort.

Occasional in the southern part of the State in dry soil.

Flowering season, April and May.

Clark (Barnes); Jefferson.

ARENARIA L.

A. SERPYLLIFOLIA L. Thyme-leaved Sandwort.

Quite abundant in various counties, usually in dry, coarse soils, exceptionally in low, moist, sandy places.

Flowers from May until September.

Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (Barnes); Fayette (Hessler); Knox (Spillman).

A. STRICTA Michx.

(*A. Michauxii* Hook.)

Reported only from the northern counties in dry, coarse drift soil. Not abundant in any of its stations.

Lake (Hill); St. Joseph (Rothert).

A. PATULA Michx.

In open, dry places in Tippecanoe County, upon authority of Dr. C. R. Barnes.

Flowering specimens collected May 17.

MCEHRINGIA L.

M. LATERIFLORA (L.) Fenzl. Blunt-leaved Sandwort.

(*Arenaria lateriflora* L.)

Found somewhat commonly in the central and northern counties of the State in moist soils, especially on shores of streams and lakes.

Flowers in May and June.

Jay, Delaware, Randolph, and Wayne (Phinney); Lake (Hill); Wabash (Jenkins); Fayette (Hessler).

SPERGULA L.

S. ARVENSIS L. Sandweed.

Not generally distributed nor abundant. Found only in southern part of the State so far as reports go.

Collected in flower June 18.

Clark (Baird and Taylor).

ANYCHIA Michx.

A. DICHOTOMA Michx. Forked Chickweed.

Found in thickets and other shaded places in many parts of the State. Much more widely distributed than the reports indicate.

Flowers from June until September.

Daviess (Clements); Jefferson (J. M. Coulter); Kosciusko (Chipman); Fayette (Hessler); Tippecanoe (Coulter).

A. CANADENSIS (L.) B. S. P. Slender Forked Chickweed.*(A. capillacea DC.)*

In similar situations but less common and less widely distributed.

Flowering season, June until September.

Daviess (Clements); Kosciusko (Chipman); Tippecanoe (Coulter).

NYMPHÆACEÆ. Water Lily Family.**CABOMBA** Aubl.**C. CAROLINIANA A. Gray. Cabomba.**

This southern form is only found in the extreme southwestern counties, in the deeper ponds. Locally abundant.

Flowers from May until September.

Gibson and Posey (Schneck).

BRASENIA Schreb.**B. PURPUREA (Michx.) Casp. Water-shield.***(B. peltata Pursh.)*

Abundant in most lakes and sluggish streams in the State. Especially profuse in the shallow bays of the northern inland lakes.

Flowering in July and August.

Noble (Van Gorder); Laporte (Barnes); Gibson and Posey (Schneck); Kosciusko (Coulter); Marshall, Dekalb, and Monroe (Blatchley); Shriner Lake (Deam); Cass (Hessler); Steuben (Bradner).

NYMPHÆA L.**N. ADVENA Soland. Large Yellow Pond Lily.***(Nuphar advena R. Bv.)*

Common throughout the State in ponds, lakes and sluggish streams, frequently almost completely choking ditches.

Flowers from April until September.

Kosciusko (Coulter); Cass (Hessler); Laporte (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Vermillion (Wright); Monroe and Vigo (Blatchley); Clay and Putnam (MacDougal); Round Lake (Deam); Hamilton (Wilson); Steuben (Bradner).

N. SAGITTÆFOLIA Walt. Arrow-leaved Pond Lily.

A species that has found its way from the south into our southwestern counties. Rare, in the deeper ponds of the region.

Flowers collected June 23.

Gibson and Posey (Schneck).

CASTALIA Salisb.**C. ODORATA** (Dryand) Woodv. and Wood. Pond Lily. White Water Lily. Sweet-scented Water Lily.

(*Nymphaea odorata* Ait.)

Abundant in many parts of the State, especially in the region of the small lakes and in the swamp regions of the Kankakee. Found, however, throughout the entire State.

Flowers late in June and continues through August.

Kosciusko (Coulter); Loporte (Barnes); Gibson and Posey (Schneck); Vigo (Blatchley); Round Lake (Deam); Kankakee (Hussey); Steuben (Bradner).

C. TUBEROSA (Paine) Greene. Tuberous White Water Lily.

(*Nymphaea reniformis* DC.)

In ponds and sluggish streams in various parts of the State. Usually common in the stations in which it occurs.

Flowers from June through August.

Cass (Hessler); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); St. Joseph (Rothert); Vigo (Blatchley).

NELUMBO Adans.**N. LUTEA** (Willd.) Pers. American Lotus. Water Chinquapin.

Found only in the southern part of the State where it is locally rather common in deep ponds. The farinaceous tuber and seeds are edible.

Flowering in July and August.

Gibson and Posey (Schneck); Vigo (Blatchley).*

CERATOPHYLLACEÆ. Hornwort Family.**CERATOPHYLLUM** L.**C. DEMERSUM** L. Hornwort.

In ponds and sluggish streams in various parts of the State. Usually overlooked by collectors because of its submerged habit.

*Occurs also near Attica, Fountain County.—W. S. B.

Probably to be found in all parts of the State if looked for in June and July.

Flowers from June until in August.

Hamilton (Wilson); Kosciusko (Coulter); Lake (Hill); Gibson.

MAGNOLIACEÆ. Magnolia Family.

MAGNOLIA L.

M. ACUMINATA L. Cucumber Tree.

Found native in sparing numbers in the counties fronting the Ohio River. It is usually found in moist, alluvial soils. It is largely cultivated as an ornamental form in lawns and parks, and has proved itself able to withstand the rigors of winter as far north as Tippecanoe County.

Flowers in May and June.

Jefferson and Tippecanoe (Coulter); Putnam (MacDougal).

LIRIODENDRON L.

L. TULIPIFERA L. Yellow Poplar. White Wood. Tulip Tree.

Indicative of rich soils and formerly largely distributed throughout the State. In the early history of the State it was one of the most numerous and largest of the forest trees. It reaches its greatest development in the valley of the lower Wabash River, but is being rapidly exterminated. Dr. Schneck gives the following measurements of a specimen in Gibson County: "Circumference above roots and swells, 25 feet; height of trunk from roots to first branch, 91 feet; total height, 190 feet." A measurement of 150 specimens in Jefferson County gave an average diameter of three and one-half feet at three feet above the ground, and average height of 87 feet. The tree from an economic standpoint is one of the most valuable occurring in our area, and this high value has led to its practical extermination. I have observed it growing freely in second growth timber in the southern counties, a fact which suggests that it would well repay culture. Cattle can not be pastured in a poplar grove without damage to the trees. Where areas have been heavily pastured for a few years, all the poplars, even the largest forms, have been killed.

The flowering season is in May and June.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko and Jefferson (Coulter); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

ANONACEÆ. Custard-apple Family.

ASIMINA Adans.

A. TRILOBA (L.) Dunal. Papaw. Custard Apple.

Extremely abundant in the southern part of the State where it covers wide areas. Less common farther north, but found in most counties of the State. It is usually found in rich, rather low woods, though very abundant on limestone hills in the southern part of the State. It reaches its greatest development in the lower Wabash valley, where at times it is from 12 to 15 inches in diameter. The wood is of no especial value; the bark, after maceration, is sometimes used for ropes and mats. The leaves are supposed to exert a preservative influence, and are largely used by small dealers for covering meat, fresh dressed poultry and fish.

Two forms, not separated botanically, are associated in our area. They differ in time of flowering, in size, shape, color and flavor of the fruit, in leaf shape, venation and odor and in color of the bark. They are of constant popular recognition and are probably separate species, never seeming to intergrade.

Flowering season March and April.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

RANUNCULACEÆ. Crowfoot Family.

HYDRASTIS Ellis.

H. CANADENSIS L. Yellow Puccoon. Yellow Root.

Found throughout the State in rich soils on hillsides or in woods. It is disappearing in many parts of the State, partly because of cultural changes, partly because of its being largely used as a household remedy.

Flowering season, April and May.

Tippecanoe (Cunningham); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Jay, Delaware, Randolph and Wayne (Phinney); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Decatur and Shelby (Ballard); Hamilton (Wilson); Steuben (Bradner).

CALTHA L.

C. PALUSTRIS L. Marsh Marigold. Marsh Cowslip.

Frequent in wet places in many parts of the State. Usually found in marshes and swamps. In some of the central counties it is rare, but in most stations is quite common.

Flowers in April and May.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Monroe and Vigo (Blatchley); Putnam (MacDougal); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Fayette (Hessler); Knox (Spillman); St. Joseph (Rothert); Decatur and Shelby (Ballard); Hamilton (Wilson); Steuben (Bradner).

COPTIS Salisb.

C. TRIFOLIA (L.) Salisb. Gold-thread.

This northern species was first recorded as a member of the State flora by Mr. W. B. Van Gorder. With us it is found only in the northern counties growing in sphagnum morasses or tamarack swamps. Its yellow root is bitter to the taste, and because of its supposed healing properties has given to the plant the name "Canker Root." Not abundant in any of its stations.

Flowering from May through July.

Fulton (Hessler); Noble and Dekalb (Van Gorder); Steuben (Bradner).

ISOPYRUM L.

I. BITERNATUM (Raf.) T. and G. False Rue Anemone.

A common spring form in most parts of the State growing in moist open woods and shady places. It prefers rich soil, rarely being found in sandy soil. In the southern counties it is exceptionally plentiful in beech woods.

Flowering season, May and June.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Cass (Hessler); Daviess (Clements); Kosciusko (Coulter); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Knox (Spillman); Shelby (Ballard); Hamilton and Marion (Wilson).

ACTEA L.

A. RUBRA (Ait.) Willd. Red Baneberry.*(A. spicata rubra Ait.)*

In moist woods and thickets in several counties of the State. Very difficult to separate from *A. alba* unless the forms are in fruit. Associated with *A. alba*, but much less common.

Flowering season, April and May.

Tippecanoe (Hussey); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder).

A. ALBA (L.) Mill. White Baneberry.

Of wide distribution in the State and common in shaded localities, in moist, rich soil. Found in dense woods and thickets, very rarely in open places. Quite variable, intergrading with the preceding species.

Flowering season, April and May.

Jefferson (Barnes); Tippecanoe (Miles and Earl); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyneke); Noble (Van Gorder); Round Lake (Deam); Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

CIMICIFUGA L.

C. RACEMOSA (L.) Nutt. Black Snakeroot. Black Cohosh.

In shady places, in rich sandy soil. Formerly very abundant, but now rapidly disappearing. Not reported further north than Tippecanoe County.

Flowers in June and July.

Fayette (Hessler); Gibson and Posey (Schneck); Clark (Baird and Taylor); Kosciusko (Coulter); Franklin (Meyneke); Jefferson (J. M. Coulter); Dearborn (Collins); Tippecanoe (Conner and Laben); Shelby (Ballard).

AQUILEGIA L.

A. CANADENSIS L. Wild Columbine.

Abundant in the southern part of the State, chiefly on limestone rocks and ledges. The species becomes less frequent in the

northern counties where it is usually found in coarse soils or about old stumps.

Flowers from April until late in August.

Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Noble (Van Gorder); Dearborn (Collins); Jay, Delaware, Randolph and Wayne (Phinney); St. Joseph (Rothert); Decatur and Shelby (Ballard); Steuben (Bradner).

A. VULGARIS L. European Columbine.

Escaped from cultivation in different parts of the State and maintaining itself well in rocky or coarse gravel soils. It escapes more frequently in the southern counties and is not infrequent in the neighborhood of abandoned dwellings.

Flowers in May and June.

Noble (Van Gorder); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (J. M. Coulter).

DELPHINIUM L.

D. CONSOLIDA L. Field Larkspur.

Quite common in the southern counties, much less so in the northern part of the State. It usually occurs in old fields and along roadsides, apparently having entered our flora as an escape from cultivation.

Flowers from May until September.

Jefferson and Madison (J. M. Coulter); Fayette (Hessler); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Vigo (Blatchley); Steuben (Bradner).

D. URCEOLATUM Jacq. Tall Larkspur.

(*D. exaltatum* Ait.)

This species is doubtfully admitted upon rather scant specimens from Wayne County. In view of the antecedent report of the occurrence of the species in the same locality by Dr. Phinney I have allowed the reference to stand.

Collected in flower May 29th.

Wayne (Phinney); Dearborn (Collins).

D. CAROLINIANUM Walt. *Carolina Larkspur.**(D. azureum Michx.)*

Reported from two counties and admitted upon the "*legit*" of Dr. John M. Coulter. The range probabilities are decidedly against the occurrence of the form in Indiana. I have seen no specimens, but rest the admission of the species upon the authority cited.

Flowering specimens collected June 7th.

Wayne (Phinney); Jefferson (J. M. Coulter).

D. TRICORNE Michx. *Common or Dwarf Larkspur.*

Found in all parts of the State in fair abundance in rich soils. Usually more plentiful and of better development in woods or upon shaded hillsides. The species is very variable both as to size, color of the flowers, denseness of raceme and amount of spreading of follicles. This variability makes it possible that the two preceding species may be found to be extreme forms of *D. tricornae*.

Flowers from April through June.

Jefferson and Madison (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Coulter); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Shelby (Ballard); Kosciusko (Coulter); Hamilton (Wilson).

ANEMONE L.**A. CAROLINIANA** Walt. *Carolina Anemone.*

Added to the flora by Mr. W. S. Blatchley, who reports it as rare on the "borders of prairies and in dry, open woods."

Collected in flower in April.

Vigo (Blatchley).

A. CYLINDRICA A. Gray. *Long-fruited Anemone.*

In the northern part of the State growing in open places in rather rich, sandy soil. Quite frequent.

Flowering season, June until August.

Tippecanoe (Hussey); Elkhart (Barnes); Putnam (MacDougal); Kosciusko (Coulter); Noble (Van Gorder); Steuben (Bradner).

A. VIRGINIANA L. Tall Anemone.

Of wide distribution in the State, found usually in low, rich soil. It occurs either in the woods or in open places with its best development in the former. Frequent in most of its stations.

Flowering from June until September.

Jefferson (Barnes); St. Joseph (Rothert); Vigo and Monroe (Blatchley); Gibson and Posey (Schneck); Putnam (MacDougal); Kosciusko (Coulter); Daviess (Clements); Clark; Baird and Taylor; Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Steuben (Bradner).

A. CANADENSIS L. Canada Anemone.

(*A. Pennsylvanica* L.)

The most widely distributed and abundant member of the genus in the State. It occurs in various situations, but most frequently in low, shaded places in rich soils. It is, however, found in dry, gravelly or sandy soils, but never in great abundance in such a situation.

Flowers from May until the middle of September.

Tippecanoe (Hussey); Elkhart (Barnes); St. Joseph (Rothert); Fayette (Hessler); Vigo (Blatchley); Gibson and Posey (Schneck); Daviess (Clements); Cass (Hessler); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Hamilton and Marion (Wilson); Decatur (Ballard).

A. QUINQUEFOLIA L. Wind flower. Wild Anemone.

(*A. nemorosa* Michx.)

Not at all common in the State. The forms usually so referred are either *Isopyrum biternatum* or *Syndesmon thalictroides*. The species is apparently confined to the southern part of the State, where it grows in low, open woods in rich soils.

Flowers from April through June.

Jefferson (Barnes); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Steuben (Bradner).

HEPATICA Scop.**H. HEPATICA (L.) Karst. Hepatica. Round-leaved Liverwort.**

(*H. triloba* Chaix.)

One of the earliest blooming forms. It is found in several counties of the State growing in protected places about the roots of trees and in sheltered ravines. It is much less abundant than

the following species with which it is associated and with which it intergrades.

Flowering from first warm days in February or March until in June or July.

Tippecanoe (Cunningham); Kosciusko (Coulter); St. Joseph (Rothert); Decatur (Ballard); Lake (Hill).

H. ACUTA (Pursh) Britton. Liverwort. Spring Hepatica.
(*H. acutiloba* DC.)

In similar situations as the preceding, but more widely distributed and much more plentiful. The prevailing form in the State.

Flowers from March through June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

SYNDESMON Hoffmg.

S. THALICTROIDES (L.) Hoffmg. Rue Anemone.
(*Anemonella thalictroides* Spach.)

Widely distributed and abundant in most parts of the State. A very variable form growing most plentifully in rich, open woods, less common in sandy soils and rare in drift soils. Often mistaken for the wind flower, *Anemone quinquefolia*.

Flowering season from March through June.

Jefferson and Madison (Barnes); Monroe and Vigo (Blatchley); Fayette and Cass (Hessler); Lake (Hill); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Tippecanoe (Cunningham); Daviess (Clements); Kosciusko (Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Noble (Van Gorder); Franklin (Meyncke); St. Joseph (Rothert); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

CLEMATIS L.

C. VIRGINIANA L. Virgin's Bower. Wild Clematis.

Found in all parts of the State, usually in abundance. It grows most luxuriantly in rich, loose soils in shaded places. It is frequently very abundant near the borders of thickets along streams. A handsome vine well worthy of more general cultivation.

Flowers from June until September.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe, Hamilton and Marion (Wilson); Steuben (Bradner).

C. SIMSII Sweet. Sim's Clematis

(*C. Pitcheri* Torr. and Gray.)

Confined to the southern counties where it is sparingly found in rich bottom lands, or along railroads. Evidently having entered our flora from the south, the Indiana stations marking the northern limit of the species.

Flowers in May and June.

Daviess (Clements); Gibson and Posey (Schneck); Vigo (Blatchley).

C. VIORNA L. Leather Flower.

A vine climbing over bushes and underbrush, usually growing in rich moist soils. Abundant in the southern counties, becoming less frequent northward, with no stations reported north of Tippecanoe County.* Easily recognized by the remarkably thick sepals of the purple calyx.

Flowers from May until late in June.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Tippecanoe (Cunningham); Hamilton (Wilson).

MYOSURUS L.

M. MINIMUS L. Mouse Tail.

Reported as occurring occasionally in rich, bottom lands in the southwestern counties of the State.

Flowers in our area in May and June.

Gibson and Posey (Schneck).

*C. VIORNA has been taken by me near Delphi, Carroll County, and by Hessler in Cass County.—W. S. B.

TRAUTVETTERIA F. and M.

T. CAROLINENSIS (Walt.) Vail. False Bugbane.(T. *palmata* F. and M.)

In the hill regions in the southern counties of the State. Not abundant in any of its stations, but included in most collections from that region.

Flowering in June and July.

Floyd (Clapp); Clark (Barnes).

RANUNCULUS L.

R. DELPHINIFOLIUS Torr. Yellow Water Crowfoot.(R. *multifidus* Pursh.)

Rather abundant in ponds and shallow, sluggish streams in various counties of the State.

Flowers from early in May until August.

Tippecanoe (Hussey); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Dearborn (Collins); Noble (Van Gorder); Knox (Spillman); Hamilton (Wilson); Steuben (Bradner).

R. PURSHII Richards. Pursh's Buttercup.(R. *multifidus terrestris* Gray.)

In wet soils near margins of lakes and ponds, or on the banks of sluggish streams. Plentiful in the stations in which it occurs.

Flowers from May until in July.

Tippecanoe (Cunningham); Vigo (Blatchley); Daviess (Clements); Marshall (Hessler).

R. PUSILLUS Poir. Low Spearwort.

Reported from a single station and verified by herbarium specimens. I have not seen the specimens, but regard the occurrence of the form within our area as practically impossible. The form is entered under the rules governing the preparation of the catalogue pending examination of the specimens.

Knox (Spillman).

R. REPTANS L.(R. *Flammula reptans* Meyer.)

Confined to the counties fronting the Ohio River, and found growing along its shores.

Flowers from June until August.

Jefferson (J. M. Coulter); Clark (Baird and Taylor).

R. OBTUSIUSCULUS Raf. Water Plantain Spearmint.*(R. ambigens Wats.)*

In marshes and at borders of ponds in various parts of the State. Not abundant in any of its stations.

Flowers from June until in August.

Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Noble (Van Gorder); Decatur and Shelby (Ballard).

R. ABORTIVUS L. Kidney-leaved Crowfoot.

Found abundantly throughout the State in moist grounds in shaded places. It frequently invades well watered lawns becoming an annoying weed. Its best development is found in rich soils although it is not uncommon in dry, sterile situations. The form is extremely variable.

Flower from the middle of March until September or later.

Jefferson (Barnes); Tippecanoe (Hussey); Vigo and Monroe (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Decatur and Shelby (Ballard); St. Joseph (Rothert); Hamilton and Marion (Wilson).

R. MICRANTHUS Nutt. Rock Crowfoot.*(S. abortivus micranthus Gray.)*

In pastures and on hillsides in coarse or sandy soil, or upon rocks. Confined chiefly to southern counties.

Flowers from April through August.

Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Franklin (Meyncke); Gibson and Posey (Schneck); Knox (Spillman); Jefferson (J. M. Coulter).

R. SCELERATUS L. Ditch Crowfoot. Cursed Crowfoot.

In swamps and brooks, also along the shores of ditches. Found in a few counties, and not abundant in any of its stations.

Flowers from April through July.

Noble (Van Gorder); Cass (Hessler); Vigo (Blatchley); Tippecanoe; Steuben (Bradner).

R. RECURVATUS Poir. Hooked Crowfoot.

In many counties of the State growing in open woods and fields. The species prefers loose, rich, moist soil and rather shaded localities.

Flowering season from April through June.

Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyneke); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); St. Joseph (Rothert); Hamilton and Marion (Wilson); Steuben (Bradner).

R. ACRIS L. Tall or Meadow Buttercup.

Found in isolated stations in a few counties. It usually grows in meadows or fields in dry soils.

Flowers from May until August.

Monroe (Blatchley); Putnam (MacDougal); Dearborn (Collins); Marion (Hessler).

R. BULBOSUS L. Bulbous Buttercup.

Sparingly found in a few counties in fields and along roadsides in dry, generally sandy soil.

Flowers from May until August.

Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins).

R. PENNSYLVANICUS L. f. Bristly Buttercup.

Chiefly northern in its distribution in very damp, open places, usually not far removed from streams or lakes.

Flowering season, June and July.

LaPorte (Barnes); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Steuben (Bradner).

R. MACOUNII Britton. Macoun's Buttercup.

(*R. hispidus* Hook.)

Added to the flora by Mr. W. S. Blatchley, the verifying specimens being in the DePauw herbarium. The species is a member of our flora, but has as yet no other station than that discovered by Mr. Blatchley.

Monroe (Blatchley).

R. REPENS L. Creeping Buttercup.

Common in fields and meadows, usually in low, damp places. In the stations in which it occurs it is ordinarily plentiful, though not of as wide distribution as the following species, with which it is often confused.

Flowers from April until July.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Monroe (Blatchley); Fayette (Hessler); Kosciusko (Coulter); Daviess (Clements); St. Joseph (Rothert); Steuben (Bradner).

R. SEPTENTRIONALIS Poir. Swamp or Marsh Buttercup.

Common in marshes and very wet low places. Usually indicative of rich soils though occasionally ranging into dry, sterile places. In the latter situation it is frequently mistaken for *R. acris*.

Flowers from April until August.

Jefferson (J. M. Coulter); Putnam (MacDougal); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Knox (Spillman); Hamilton and Marion (Wilson).

R. FASCICULARIS Muhl. Early Buttercup.

Of wide distribution and abundant in its various stations. Found chiefly in dry, sandy soils in fields or on rocky hillsides.

Flowers in April and May.

Monroe and Vigo (Blatchley); Jefferson (Barnes); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Dearborn (Collins); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Decatur and Shelby (Baldard); St. Joseph (Rothert); Steuben (Bradner).

BATRACHIUM. S. F. Gray.**B. TRICHOPHYLLUM (Chaix.) Bossch. Stiff White Water Crowfoot.**

(*Ranunculus aquatilis trichophyllus* DC)

Found in lakes, ponds and sluggish streams in various parts of the State. More abundant in the northern than in the southern counties. Abandoned parts of the Wabash and Erie Canal are in many places absolutely occupied by this plant.

Flowers in April and May.

LaPorte (Barnes); Vigo (Blatchley); Johnson (Hubbard); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Kosciusko (Coulter); Tippecanoe (Cunningham); St. Joseph (Rothert); Steuben (Bradner).

B. DIVARICATUM (Schränk.) Wimmer. Stiff Water Crowfoot.*(Ranunculus circinatus* Sibth.)

Reported as common in Hamilton County, by Mr. G. W. Wilson.

Flowers from June through August.

THALICTRUM L.**T. PROICUM** L. Early Meadow Rue.

Common in almost every part of the State. It usually indicates a loose, rich soil. It is found in open woods, in waste places, and on rocky hillsides in about equal abundance.

Flowers in April and May.

Tippecanoe (Cunningham); Jefferson (Barnes); Monroe and Vigo (Blatchley); Cass and Fayette (Hessler); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Hamilton (Wilson); Steuben (Bradner).

T. PURPURASCENS L. Purplish Meadow Rue.

Rich soils in thickets and open woods; abundant in almost all parts of the State.

Flowers from early in May until August.

Jefferson (J. M. Coulter); Floyd (Clapp); Vigo and Monroe (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney).

T. POLYGAMUM Muhl Tall Meadow Rue.*(T. Cornuti* T. and G.)

Borders of ditches and swamps, and in very wet, sunny lowlands. Nowhere especially abundant, but found in all parts of the State.

Flowers from May through August.

Monroe and Vigo (Blatchley); Fayette and Cass (Hessler); Putnam (MacDougal); Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Jefferson (J. M. Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

BERBERIDACEÆ. Barberry Family.**BERBERIS L.****B. VULGARIS L. Common Barberry.**

In thickets in dry soils in several counties of the State. Apparently thoroughly naturalized in the southern counties; not reported from north of Tippecanoe County save as cultivated. Characterized by its three pronged spines and its yellow flowers, which have a heavy, sickening odor.

Flowers from May until July.

Jefferson (Barnes); Clark (Baird and Taylor); Franklin (Meyncke); Wayne (Phinney); Tippecanoe (Laben and Conner).

CAULOPHYLLUM Michx.**C. THALICTROIDES L. Blue Cohosh.**

Found in most parts of the State occurring in dense woods and thickets, in rich soils. It is of very rare occurrence in drift soils. More abundant in the central and southern counties than farther north.

Flowering in April and May.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Decatur (Ballard); Hamilton (Wilson); Steuben (Bradner).

JEFFERSONIA Bart.**J. DIPHYLLA (L.) Pers. Twin Leaf. Rheumatism Root.**

Abundant in rich soils in the southern part of the State, becoming less frequent northward, and not reported from north of Tippecanoe County. Usually found in shaded places.

Flowers in April and May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam and Union (MacDougal); Fayette (Hessler); Tippecanoe (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Dearborn (Collins); Decatur (Ballard).

PODOPHYLLUM L.

P. PELTATUM L. May Apple. Mandrake.

A familiar form found throughout the State in rich soil, in moist shaded places. The yellowish fruit is edible, but has a rather sickening odor.

Flowers in May.

Clark (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Jefferson (J. M. Coulter); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

MENISPERMACEÆ. Moonseed Family.

CEBATHA Forsk.

C. CAROLINA (L.) Britton. Carolina Moonseed.

(*Cocculus Carolinus* DC.)

A species having entered our flora from the south, and found only in the extreme southwestern counties. It is there common in river bottoms in rich, sandy soil. A slender training or climbing vine.

Flowering season from June until August.

Gibson and Posey (Schneck).

MENISPERMUM L.

M. CANADENSE L. Moonseed Vine.

In woods and along streams, usually in rich alluvial soils in the central and southern counties of the State. An attractive plant climbing over bushes and underbrush, with large cordate leaves, and bearing later in the season clusters of blue-black fruit, not unlike small grapes in appearance. Ordinarily abundant in stations in which it grows.

Flowers in June and July, or in the extreme southern counties in May and June.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Hamilton and Marion (Wilson); Steuben (Bradner).

LAURACEÆ. Laurel Family.

SASSAFRAS Nees and Eberm.

S. SASSAFRAS (L.) Karst. Common Sassafras.

(S. officinale Nees.)

Widely distributed throughout the State. In the northern counties usually reduced to a shrub, in the southern and southwestern reaching its highest development, occasionally reaching a diameter of five or six feet with a height of seventy-five feet. It averages, however, from forty to fifty feet in height with a diameter of from eighteen to thirty inches. In the localities where it occurs it frequently occupies almost exclusively wide areas. The wood is light and weak, but extremely durable in contact with the soil. It is used for skiffs, yokes, etc., and very largely for posts, rails and cooperage. Every part is aromatic, the root being largely used for its oil.

Flowers in April and May; fruit ripens in August.

Tippecanoe (Cunningham); Putnam (MacDougal); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Vigo (Blatchley); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner); Cass (Hessler).

BENZOIN Fabric.

B. BENZOIN (L.) Coulter. Spice Bush. Wild Allspice.

(Lindera Benzoin Blume.)

An aromatic shrub found in many counties of the State in moist, rich soils in shaded places.

Flowers in March and April; fruit ripens in August and September.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

PAPAVERACEÆ. Poppy Family.

PAPAVER L.

P. SOMNIFERUM L. Opium or Garden Poppy.

Escaped from cultivation in some of the southern counties where it maintains itself in waste places in rather coarse soils.

Flowers from June until September.

Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter).

ARGEMONE L.

A. MEXICANA L. Prickly Poppy.

Found occasionally in the southwestern counties in waste places. Added to the flora by Dr. J. Schneck.

Flowers from June through August.

Gibson and Posey (Schneck).

SANGUINARIA L.

S. CANADENSIS L. Bloodroot.

Common in all parts of the State, usually growing in rich soils. It is especially abundant in open woods and the protected slopes of ravines.

Flowering begins in March and continues until May.

Jefferson (Barnes); Tippecanoe (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Vermillion (Wright); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Decatur and Shelby (Ballard); St. Joseph (Rothert); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

STYLOPHORUM. Nutt.

S. DIPHYLLUM (Michx.) Nutt. Yellow or Celandine Poppy.

Abundant in most parts of the State, in moist, rich soils. Particularly frequent in low woods and the protected slopes of ravines.

Flowering season, April and May.

Jefferson (Barnes); Clark (Barnes); Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Kosciusko (Coulter); Franklin (Meyncke); Noble (Van Gorder); Dearborn (Collins); Wayne (Phinney); Decatur (Ballard); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

CHELIDONIUM L.

C. MAJUS L. Celandine.

Admitted to the flora upon the authority of Dr. L. M. Underwood, who reports it as occurring along the Vandalia Railroad near Greencastle.

Collected in flower early in June.

Putnam (Underwood); Steuben (Bradner).

BICUCULLA Adans.

B. CUCULLARIA (L.) Millsp. Dutchman's Breeches.

(*Dicentra Cucullaria* Torr.)

Common throughout the State in moist, rich soils in shaded places. Usually very abundant in its stations.

Flowers from March until in May.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Vigo and Monroe (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Knox (Spillman); Cass and Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

B. CANADENSIS (Goldie) Millsp. Squirrel Corn:

(*Dicentra Canadensis* DC.)

Of wide distribution and usually abundant in situations similar to the preceding. Flowers very fragrant.

Flowers from April until in June.

Kosciusko (Coulter); Putnam (MacDougal); Vigo and Monroe (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyneke); Jefferson (J. M. Coulter); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

ADLUMIA Raf.

A. FUNGOSA (Ait.) Greene. Climbing Fumitory.

(*A. cirrhosa* Raf.)

Found sparingly in the northern part of the State in moist woods and thickets. A slender vine climbing over other plants by its slender petioles.

Flowers from June until the early frosts.

Steuben (Bradner).

CAPNOIDES Adans.

- C. SEMPERVIRENS (L.) Borek.** Pink Corydalis.
(*Corydalis glauca* Pursh.)

A northern form which is found only in our extreme northern counties. It is there found on sand ridges relatively near the beach, being one of the alpine members of the flora of the dune region.

Flowers from May until September.

Lake (Hill); Porter (Cowles).

- C. FLAVULUM (Raf.) Kuntze.** Pale Corydalis.
(*Corydalis flavula* Raf.)

Quite frequent, especially in the southern part of the State. It grows in rich woods, thriving best in soils with considerable admixtures of sand.

Flowering season, from April until June.

Cass (Hessler); Jefferson (Barnes); Putnam (MacDougal); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Vigo (Blatchley).

- C. AUREUM (Willd.) Kuntze.** Golden Corydalis.
(*Corydalis aurea* Willd.)

Reported only from the "Knob" regions in southern Indiana. Neither common nor of wide distribution.

Flowering in April and May.

Floyd (Clapp).

FUMARIA L.

- F. OFFICINALIS L.** Hedge Fumitory.

Occasionally found in the eastern counties of the State in dry, coarse soil in waste places. Probably migrant.

Flowering specimens collected July 3d.

Wayne (Phinney); Franklin (Meyncke).

CRUCIFERÆ. Mustard Family.

LEPIDIUM L.

- L. VIRGINICUM L.** Wild Pepper-grass. Canary-grass.

Probably found in every county in the State. It occurs abundantly along streets and roadsides and at times becomes a very annoying weed in lawns and dooryards. Its size and general habit

vary greatly, the leaves especially showing modifications. It begins flowering early in May, or in favorable seasons in April, and continues through September. Its fruit furnishes food for many of the smaller birds. Its distribution is so general that a citation of counties in which it is reported to occur is unnecessary.

L. APETALUM Willd.

(*L. intermedium* Gray.)

Very closely allied to the preceding from which it is probably not generally distinguished. While the general range of the species includes Indiana, the mass distribution is decidedly eastern. It is doubtful if it occurs in any abundance in the State.

Flowers, May to September.

Clark (Baird and Taylor); Decatur (Ballard); Vigo (Blatchley).

SISYMBRIUM L.

S. OFFICINALE (L.) Scop. Hedge Mustard.

Common throughout the State in waste places. The flowering season begins in April, and in some of the southern counties continues until in December. It affects dry soils, and is especially abundant about dwellings or in abandoned fields.

Jefferson (Barnes); Tippecanoe (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Daviess (Clement); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Hamilton and Marion (Wilson).

CAKILE Gaertn.

C. EDENTULA (Bigel.) Hook. American Sea-rocket.

(*C. Americana* Nutt.)

The character plant of the middle beach, extending also to the upper beach, of Lake Michigan in Lake and Porter counties. The plant is a sand plant, confined to the seashore and the shores of the Great Lakes. When extending farther inland *Cakile* is usually found on windward slopes of active dunes. The succulent character of the form adapts it admirably for the extreme xerophilous conditions to which beach plants are subjected. It has a habit somewhat resembling the "tumble weeds," the distribution of the seeds being thus secured.

SINAPIS L.

S. ALBA L. White Mustard.*(Brassica alba Boiss.)*

Only occasionally found in waste fields and evidently escaped from cultivation. Reported from several southern counties. Herbarium specimens from Jefferson (J. M. Coulter).

Hamilton (Wilson); Steuben (Bradner).

BRASSICA L.

B. NIGRA (L.) Koch. Black Mustard.

Common in waste and cultivated grounds throughout the State. In some communities classed among the bad weeds.

Flowering season from May to September.

Monroe and Vigo (Blatchley); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Putnam (MacDougal); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

B. ARVENSIS (L.) B. S. P. Charlock. Wild Mustard.*(B. Sinapistrum Boiss)*

In waste fields and along roadsides and streets. Rather common in the southern counties but not reported as occurring north of Putnam.

Flowering season, May and June.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Dearborn (Collins); Hamilton and Marion (Wilson); Steuben (Bradner).

BARBAREA R. Br.

B. BARBAREA (L.) MacM. Yellow Rocket or Cress.*(B. vulgaris R. Br.)*

Usually found in dry soil, preferably in waste fields, but occasionally in low ground along streams. It is nowhere especially abundant, and has no reported station north of Tippecanoe.

Flowering season, April to June.

Tippecanoe (Cunningham); Putnam (MacDougal); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Monroe (Blatchley); Hamilton (Wilson); Fayette (Hessler).

B. STRICTA Andrz.

Reported only from Putnam County, by D. T. MacDougal. The specimen seems to be *B. stricta*, but range probabilities are so strongly against it that it is somewhat doubtfully included.

IODANTHUS Torr. and Gr.**I. PINNATIFIDUS** (Michx.) Steud. Purple or False Rocket.

(*Thelypodium pinnatifidum* S. Wats.)

Frequent in the southern part of the State on rich hillsides or in low, rich woods.

It flowers in May and June, although most abundantly in May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyneke); Daviess (Clements); Clark (Baird and Taylor); Dearborn (Collins); Decatur (Ballard); Hamilton (Wilson).

RORIPA Scop.**R. SINUATA** (Nutt.) A. S. Hitchcock. Spreading Yellow Cress.

(*Nasturtium sinuatum* Nutt.)

A specimen in the Herbarium of DePauw University, collected by Dr. MacDougal, is referred to this species. The range of the form is much to the west of Indiana, and it is doubtful whether it is more than an accidental migrant. It is reported from no other station than that in Putnam County.

R. OBTUSA (Nutt.) Britton. Blunt-leaved Yellow Cress.

(*Nasturtium obtusum* Nutt.)

Reported from Tippecanoe County by Professor Hussey, and from Clark by Baird and Taylor. The Tippecanoe County reference is verified by herbarium specimens. Low grounds in rich soil.

R. PALUSTRIS (L.) Bess. Marsh Cress. Yellow Water Cress.

(*Nasturtium palustre* DC.)

Largely distributed throughout the State, growing in low ground, swamps or shallow water. Its flowering season extends from May to September. The form varies so greatly in its different stations that it suggests that some sparsely distributed species of this genus should be referred to this.

Jefferson, Clark, and Noble (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Kosciusko (Coulter); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

R. HISPIDA (Desv.) Britton. Hispid Yellow Cress.(*Nasturtium palustre hispidum* Gray.)

In wet places in the northern counties, usually in swamps or upon their borders. Not frequent.

Flowers from June through August.

Steuben (Bradner).

R. SESSILIFLORA (Nutt.) A. S. Hitchcock.(*Nasturtium sessiliflorum* Nutt.)

Occurring only in southwestern counties of the State in low grounds.

Flowering season from April to July.

Vigo (Blatchley); Gibson and Posey (Schneck).

R. NASTURTIIUM (L.) Rusby. Water Cress.(*Nasturtium officinale* R. Br.)

Abundant in the northern portions of the State, less frequent in the southern counties. Found in shallow, clear streams and in ditches. The best development is usually found in cool streams near a spring or fed by springs.

Flowers in May and June.

Tippecanoe (Cunningham); Kosciusko (Coulter); Putnam (MacDougal); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Daviess (Clements); Fayette (Hessler); St. Joseph (Rothert); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Monroe and Vigo (Blatchley).

R. ARMORACIA (L.) A. S. Hitchcock. Horseradish.(*Nasturtium Armoracia* Fries.)

Escaped from cultivation and established in moist, rich ground, in various counties. Reported from Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Gibson and Posey (Schneck); Hamilton and Marion (Wilson).

R. AMERICANA (A. Gray) Britton. Lake Cress.(*Nasturtium lacustre* Gray.)

Common in slow streams and in shallow lakes in the western part of the State.

Flowers, June to September.

Tippecanoe (Cunningham); Vigo (Blatchley); Gibson and Posey (Schneck); Vermillion (Wright).

CARDAMINE L.

C. PRATENSIS L. Meadow Bitter Cress. Cuckoo Flower.

This northern form is found in swamps in two of our northern counties, where it blossoms late in April.

Lake (Hill); Noble (Van Gorder).

C. HIRSUTA L. Hairy Bitter Cress.

Found in moist soils, more abundant about springs and along streams. Widely distributed through the State.

It begins to flower in April, and occasionally flowers may be found as late as July.

Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Hussey); Decatur (Ballard); Hamilton (Wilson); Steuben (Bradner).

C. PURPUREA (Torr.) Britton. - Purple Cress.

(*C. rhomboidea purpurea* Torr.)

In wet places on hillsides or in ravines, frequent also in damp open woods. Occasionally found in dry soil.

Among our earliest forms to flower, frequently blossoming early in March, although usually in full bloom over most of our area in April.

Tippecanoe (Cunningham); Daviess (Clements); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Jefferson (Barnes); Decatur (Ballard); Knox (Spillman); St. Joseph (Rothert); Hamilton and Marion (Wilson).

C. BULBOSA (Schreb.) B. S. P. Spring Cress. Bulbous Cress.

(*C. rhomboidea* DC.)

In low, wet places or damp woods throughout the State. Usually quite abundant.

Flowering season from March to June, the earlier date standing for the extreme southern counties.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Johnson (Hubbard); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck);

Franklin (Meyncke); Noble (Van Gorder); Fayette (Hessler); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

DENTARIA L.

D. LACINIATA Muhl. Cut-leaved Toothwort or Pepper-root.

Occurring in moist, rich soil throughout the State, usually associated with *Cardamine bulbosa*. Flowering season from April to June. More abundant in the southern part of the State. An exceedingly variable species.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); St. Joseph (Rothert); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

D. DIPHYLLA Michx

Found only in the southern counties, usually occurring in rich woods. Not abundant in any locality except Monroe County.

Flowers in April and May.

Jefferson (Barnes); Monroe (Blatchley); Clark (Baird and Taylor); Dearborn (Collins); Decatur (Ballard); Steuben (Bradner).

D. HETEROPHYLLA Nutt. Slender Toothwort.

Rare in a few counties in the southern part of the State, occurring in thickets and rich woods.

It flowers very early, the season covering March and April.

Monroe (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Fayette (Hessler).

LEAVENWORTHIA Torr.

L. UNIFLORA (Michx) Britton.

(*L. Michauxii* Torr.)

This southern species is confined to the Ohio River counties. The single station from which specimens have been received is Buffalo Lick, near Charlestown, Clark County.

First collected by Dr. Charles R. Barnes.

BURSA Weber.

B. BURSA-PASTORIS (L.) Britton. Shepherd's Purse.

(Capsella Bursa-pastoris Moench.)

A very common form throughout the State, chiefly in waste ground and about dwellings. In some cases a very annoying weed in lawns.

It begins to bloom very early, about the first of March, and continues until the most severe frosts. In mild winters it may be found in flower in December and January in sheltered places. Exceeding variable.

Reported from almost every county in the State as "too common."

CAMELINA Crantz.

C. SATIVA (L.) Crantz. False Flax.

Not commonly distributed. Reported only from five counties: Clark (Baird and Taylor); Jefferson (J. M. Coulter); Hamilton (Wilson); Fayette (Hessler); Tippecanoe (Hussey).

It may be expected in fields where flax has been cultivated.

DRABA L.

D. VERNA L. Vernal Whitlow Grass.

One of our smallest flowering plants, occurring in fields and by roadsides in counties south of the center of the State.

It is a winter annual and flowers from February to May.

Jefferson (Coulter); Clark (Baird and Taylor); Putnam (Underwood); Hamilton (Wilson); Marion (Blatchley).

D. CAROLINIANA Walt. Carolina Whitlow Grass.

Also confined to the southern half of the State, excepting one station.

It blossoms in the first warm days late in February or early in March, and its seeds are ripened by April.

It rarely exceeds three inches in height, and, as Professor Blatchley says, "succeeds in the struggle for existence by being first upon the scene of action." It is usually quite abundant in the localities in which it is found.

Vigo (Blatchley); Daviess (Clements); Putnam (Underwood); Hamilton (Wilson); Tippecanoe (Barnes); Lake (Hill).

D. BRACHYCARPA Nutt. Short-fruited Whitlow Grass.

In dry, sandy soil and quite abundant in localities in which it is found.

Habit of growth and flowering season as in preceding species.

Gibson and Posey (Schneck); Daviess (Clement); Lake (Hill).

SOPHIA Adans.

S. PINNATA (Walt.) Britton. Tansy Mustard.

(*Sisymbrium canescens* Nutt.)

Occurring in dry soil in several counties. It is often found along railways or in gravel banks bordering streams.

Flowers in June.

Tippecanoe (Cunningham); Vigo (Blatchley); Cass (Hessler); Putnam (MacDougal); Franklin (Meyncke); St. Joseph (Rothert); Knox (Spillman).

STENOPHRAGMA Celak.

S. THALIANA (L.) Celak. Mouse-ear Cress. Wall Cress.

(*Sisymbrium Thaliana* Gaud.)

Specimen from only one station in St. Joseph County, collected by Mr. Otto Rothert. Probably brought in along the railroads from the east. Not spreading.

ARABIS L.

A. VIRGINICA (L.) Trelease. Virginia Rock Cress.

(*A. Ludoviciana* Meyer.)

Formerly quite frequent in the State, especially in southern part. Of late years becoming quite rare.

Flowering season, March to May.

A. LYRATA L. Lyre-leaved Rock Cress.

In sandy soil, and especially abundant along the shores of Lake Michigan, near Michigan City. Confined to northern counties.

Flowering season, April to July.

Lake (Barnes and Hill); Laporte (Barnes); Steuben (Bradner).

A. DENTATA Torr. and Gray. Toothed Rock Cress.

Apparently confined to the southern half of the State and nowhere abundant. In our area it frequents dry, rocky soil, and is more commonly found in open woodland.

Flowers in June.

Dr. Hessler reports it "rather frequent on dry, limestone cliffs and in hilly drift," while Mr. Blatchley reports its occurrence in "rocky woods."

Vigo and Monroe (Blatchley); Cass (Hessler); Franklin (Meyncke); Jay, Delaware, Randolph and Wayne (Phinney); Gibson (Schneck); Decatur (Ballard); Hamilton (Wilson).

A. PATENS Sulliv. Spreading Rock Cress.

Sparsely distributed through the State.

Commencing to flower in the southern counties in April, in the northern in May.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Decatur (Ballard).

A. HIRSUTA (L.) Scop. Hairy Rock Cress.

Occurring on rocky hillsides or dry, gravelly soil in several counties of the State.

Flowers in April and May.

Vigo, Monroe and Montgomery (Blatchley); Putnam (MacDougall); Cass (Hessler); Noble (Van Gorder).

I have never seen the plant growing, and the data as to soil habits are taken from Mr. Blatchley.¹

A. LAEVIGATA (Muhl.) Poir. Smooth Rock Cress.

On rocky hillsides and in ravines and thin woods.

Flowers in May and June, although in favored localities it may bloom in April.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougall); Fayette (Hessler); Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Vermillion (Wright); Decatur (Ballard); Hamilton (Wilson).

A. CANADENSIS L. Sickie-pod.

A form found only in sand or gravel soils, in rather shaded positions.

Flowers somewhat later than other forms, June being the time over the greater part of its area.

Tippecanoe (Cunningham); Vigo (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph and Wayne (Phinney); Lake (Hill); Steuben (Bradner).

¹Blatchley, W. S. A Catalogue of the Uncultivated Ferns and Flowering Plants of Vigo County, Indiana. 21st Geol. Rept., 1896, p. 635.

A. BRACHYCARPA (T. and G.) Britton. Purple Rock Cress.

Probably a migrant, coming into our flora from the north.

Reported from Tippecanoe (Barnes); Decatur (Ballard). Occurring also in the dune flora of Lake and Porter counties.

A. GLABRA (L.) Beruh. Tower Mustard.

(*A. perfoliata* Lam.)

Reported as occurring along railroad in Putnam County by Dr. MacDougal. Verifying specimens in DePauw herbarium. Probably a migrant.

Steuben (Bradner).

ERYSIMUM L.

E. ASPERUM DC. Western Wall Flower. Yellow Phlox.

This showy crucifer is becoming more abundant and of more general distribution. In some localities it is so abundant as to give brilliant mass effects. It frequents gravelly soils or limestone cliff. Growing well in very light, thin soils.

Flowers in May and June.

Tippecanoe (Cunningham); Montgomery (Coulter); Cass (Hessler); Vigo (Blatchley); Putnam (MacDougal).

CAPPARIDACEÆ. Caper Family.

CLEOME L.

C. SPINOSA L. Spider-flower.

A southern form which has either escaped from cultivation in the southern part of the State, or found its way into our flora by way of the Wabash River. Sparingly found in waste places. Whether migrant or escape, it maintains itself well.

Flowering from June until in September.

Clark (Baird); Gibson and Posey (Schneck).

POLANISIA Raf.

P. GRAVEOLENS Raf. Clammy-weed.

Rather common in most parts of the State in dry, sandy or gravelly soil. More abundant in shore sand and gravel in places removed from the immediate action of the water.

Flowers from June until in September.

Bartholomew (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Montgomery; Marion (Wilson); Jennings (Barnes).

SARRACENIACEÆ. Pitcher-plant Family.

SARRACENIA L.

S. PURPUREA L. Pitcher-plant. Side-saddle Flower. Indian Cup.

In the northern counties of the State in peat bogs. Very common in the stations in which it is found. The hollow leaves are ordinarily about two-thirds full of water containing drowned insects.

Flowers from late in May until August.

Fulton and Marshall (Hessler); Laporte (Barnes); Kosciusko (Coulter); Noble (Van Gorder); Lake (Hill); Steuben (Bradner).

DROSERACEÆ. Sundew Family.

DROSERA L.

D. ROTUNDIFOLIA L. Round-leaved Sundew.

In sphagnum swamps and bogs in a few of the northern counties. Frequent, but not abundant.

Flowers in July and August.

Fulton (Blatchley); Kosciusko (Coulter); Lake; Steuben (Bradner).

D. INTERMEDIA Hayne. Spatulate-leaved Sundew.

In similar situations as the preceding, but not so abundant.

Flowers in July and August.

Lake.

CRASSULACEÆ. Orpine Family.

SEDUM.

S. TELEPHIUM L. Live-forever.

In waste places and along roadsides in dry soils. Neither abundant nor widely distributed.

Flowers from June until October.

Noble (Van Gorder); Franklin (Meyneke); Hamilton (Wilson); Steuben (Bradner).

S. TELEPHIODES Michx.

In southern counties only, on dry rock or on rocky hillsides. Not common.

Flowers from June through September.

Clark (Barnes); Vigo (Blatchley).

S. ACRE L. Wall Pepper. House-leek.

Escaped from cultivation and found in dry, rocky places, in a few localities.

Flowers from June through August.

Gibson and Posey (Schneck); Noble (Van Gorder).

S. TERNATUM Michx. Wild Stonecrop.

Found throughout the State, except perhaps in the extreme northern counties. It is found usually on rocks or in rocky soils of banks and ravines. As a rule, it is not abundant in any of its stations.

Flowers from May through August.

Monroe and Vigo (Blatchley); Fayette (Hessler); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Putnam (MacDougal); Decatur (Ballard); Hamilton and Marion (Wilson).

PENTHORUM L.**P. SEDOIDES L.** Ditch Stonecrop.

In all parts of the State, growing abundantly in low, wet places. Especially plentiful about swamps and along ditches.

Flowers from July until October.

Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Daviess (Clements); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meyneke); Jefferson (J. M. Coulter); Noble (Van Gorder); Posey (Schneck); Knox (Spillman); Tippecanoe (Cunningham); Hamilton and Marion (Wilson); Kosciusko (Coulter); Putnam (MacDougal); Hamilton (Wilson); Steuben (Bradner).

SAXIFRAGACEÆ Saxifrage Family.**SAXIFRAGA L.****S. PENNSYLVANICA L.** Swamp Saxifrage.

In many counties of the State, but nowhere abundant. The species grows in swamps or in wet woods and prairies. More frequent in the northern part of the State.

Flowering in May and early June.

Cass (Hessler); Tippecanoe (Hussey); Vigo (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); St. Joseph (Rothert); Hamilton (Wilson); Steuben (Bradner); Marion; Lake (Hill).

S. VIRGINIENSIS Michx. Early Saxifrage.

A few forms occur in southeastern Indiana on rocky hillsides and limestone ledges. An exceptional form in our area.

Flowering specimens collected April 19.

Dearborn (Collins).

SULLIVANTIA Torr. and Gray.

S. SULLIVANTII (T. and G.) Britton.

(*S. Ohionis* T. and G.)

Confined to the southern counties of the State, where it is found abundantly in a few stations. With us it is strictly a plant of limestone cliffs. It grows well up the vertical cliff walls, securing a foothold in the thinnest layers and smallest pockets of soil. It was first detected at Clifty Falls in Jefferson County, by Dr. John M. Coulter, in 1874, since which time two other stations have been located, the plant never being in any other situation than on limestone cliffs.

Flowers in June.

Jefferson and Floyd (Barnes); Clark (Baird and Taylor); Carroll.

TIARELLA L.

T. CORDIFOLIA L. False Mitrewort.

In a few counties of the State, occurring sparingly in rich, moist woods. A delicate form perhaps mistaken for *Mitella*.

Flowering in April and May.

Jay, Delaware, Randolph and Wayne (Phinney); St. Joseph.

HEUCHERA L.

H. VILLOSA Michx. Hairy Sanicle.

Only found in the southern counties of the State, where it grows in sparing numbers on rough hillsides in coarse soils.

Flowering from June through August.

Clark (Barnes).

H. AMERICANA Pursh. Alum root.

Widely distributed throughout the State; frequent, but never occurring in large numbers. Usually found in dry, coarse and even rocky soils.

Flowers from May until September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Monroe and Vigo (Blatchley); Steuben (Bradner); Fayette (Hessler).

H. HISPIDA Pursh. Rough Heuchera.

Found in dense, damp woods in a few counties. It is found in sparing numbers, but is probably of wider distribution than the citations would indicate.

Flowering in May and June.

Marshall and Vigo (Blatchley); Lake (Hill).

MITELLA L.**M. DIPHYLLO** L. Mitre-wort. Bishop's Cap.

In many counties of the State in fair abundance; growing in rich, moist soils in woods and shaded ravines. An easily recognized and pretty species.

Flowering in April and May.

Monroe and Vigo (Blatchley); Fayette (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Jefferson (Barnes); Tippecanoe (Cunningham); Noble (Van Gorder); Clark (Baird and Taylor); St. Joseph (Rothert); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

PARNASSIA L.**P. CAROLINIANA** Michx. Grass of Parnassus.

Confined to the northern counties of the State, where it is of fair abundance in marshes and in low, wet bottom lands.

Flowers from late in June through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Marion and Marshall (Blatchley); Cass (Hessler); Noble (Van Gorder); Steuben (Bradner); Lake (Hill).

HYDRANGEA L.**H. ARBORESCENS** L. Wild Hydrangea.

In many parts of the State on rocky banks of streams or on damp hillsides where the soil is coarse. Found frequently in the southern counties, less plentiful farther north, not being reported as occurring north of Tippecanoe County.

Flowers in June and July. In favorable seasons a second blooming occurs in September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Dearborn (Collins); Gibson and Posey (Schneck); Franklin (Meyneke); Clark (Baird and Taylor); Jay, Delaware, Randolph and Wayne (Phinney); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

GROSSULARIACEÆ. Gooseberry Family.

RIBES L.

R. CYNOSBATI L. Wild Gooseberry. Spiny Gooseberry.

The common wild form of our area, found in most parts of the State growing in woods or along the banks of streams usually in coarse, rocky soils.

Flowers from early April through June.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

R. GRACILE Michx. Missouri Gooseberry.

Found in several counties of the State, usually growing in shaded locations in dry, coarse soils. It is without doubt much more widely distributed than the citations indicate, having been referred in many cases to *R. rotundifolium*.

Flowers in May.

Tippecanoe (Cunningham); Kosciusko (Coulter); Vigo (Blatchley).

R. OXYACANTHOIDES L. Northern Gooseberry.

Not abundant but found in a few counties in wet soil, either in light, open woods or in bottom land thickets.

Flowering season, May and June.

Noble (Van Gorder); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Vigo (Blatchley); Steuben (Bradner).

R. ROTUNDIFOLIUM Michx.

All of the specimens labelled *R. rotundifolium* that have come to my notice are to be referred to *R. gracile*. In the hill regions of the counties fronting the Ohio River, however, the species is found upon the authority of Dr. J. M. Coulter.

Flowering in May and June.

Clark (Baird and Taylor); Jefferson (J. M. Coulter).

R. FLORIDUM L'Her. Wild Black Currant.

Throughout the State in sparing numbers, growing in damp woods.

Flowers in April and May.

Franklin (Meyneke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Montgomery (Olive); Madison (Walker); Knox Spillman); Cass (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner); Lake (Blatchley).

R. RUBRUM L. Red Currant.

(*R. rubrum subglandulosum* Maxim.)

Freely escaped from cultivation in the southern counties, but not yet reported from north of the tier of counties fronting the Ohio River. Included in Gray's Manual, sixth edition, as occurring in Indiana, doubtless from these citations.

Flowers in May and June.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Laporte.

HAMAMELIDACEÆ. Witch Hazel Family.

HAMAMELIS L.

H. VIRGINIANA L. Witch Hazel.

Found throughout the State in greater or less abundance in damp woods and thickets. In our area it is a shrub rarely exceeding six or eight feet in height.

Flowers from October through December, the fruit maturing in the early spring months.

Kosciusko (Coulter); Laporte (Barnes); Jefferson (J. M. Coulter); Tippecanoe (Hussey); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meyneke); Monroe and Vigo (Blatchley); Cedar Lake (Deam); Hamilton (Doane); Putnam (MacDougal); Steuben (Bradner).

LIQUIDAMBAR L.

L. STYRACIFLUA L. Sweet Gum. Red Gum.

Common in the southern part of the State, becoming much less frequent toward the north. It frequents low, rich soils, in which it at times reaches a height of nearly 150 feet. Its wood is hard but not strong, and is but little used in manufacturing on account of its seasoning with difficulty. It may be recognized at a distance in the fall by its brilliant coloration. Its gum has a certain commercial value as a substitute for storax.

It flowers in April and May.

The range includes probably almost all of the southern counties. The stations definitely reported are as follows:

Kosciusko (Coulter); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Monroe and Vigo (Blatchley); Decatur and Shelby (Ballard).

PLATANACEÆ. Sycamore or Plane Tree Family.

PLATANUS L.

P. OCCIDENTALIS L.

This well-known tree is very generally distributed along waterways. In favorable locations it ranges in height from 100 to 120 feet and in diameter from seven and one-half to thirteen feet, sometimes exceeding these dimensions. The larger trees are, however, for the most part, hollow, for at least the length of the first cut. The tree also is becoming common in wet soils along roads and in fields. In these more open places it is a gracefully-shaped tree and very ornamental, both in summer with its large leaves and in winter when thickly hung with its fruiting heads.

The wood is heavy and hard, but not strong, and exceedingly difficult to split and work. It is largely used for tobacco boxes, yokes and butcher blocks, and to a certain extent in the manufacture of cheap furniture.

Its chief value is perhaps to be found, because of its rapid growth, in the recovering of denuded wet soils.

Flowering season in May.

It is practically found in every part of the State, so that specific stations need not be given.

ROSACEÆ. Rose Family.

OPULASTER Medic.

O. OPULIFOLIUS (L.) Kuntze. Ninebark.

(*Physocarpus opulifolius* Maxim.)

Chiefly in the southern counties, growing on rocky banks along streams. Reported as rare as far north as Cass County. A rather handsome shrub from five to eight feet high, the bark peeling off in thin strips.

Flowers in June.

Gibson and Posey (Schneck); Dearborn (Collins); Wayne (Phinney); Franklin (Meyneke); Monroe, Marion and Wabash (Blatchley); Cass (Hessler); Jefferson (J. M. Coulter); Hamilton (Wilson).

SPIRÆA L.

S. SALICIFOLIA L. Meadow Sweet.

Common in low, wet grounds and swamps in many counties in the State. A handsome shrub from two to four feet high, with the white or rose-tinted flowers in dense panicles.

Flowering from June through August.

Tippecanoe, Laporte, Elkhart and Jefferson (Barnes); Cass (Hessler); Lagrange and Vigo (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Monroe (Dudley); Cedar Lake (Deam); Steuben (Bradner).

S. TOMENTOSA L. Hardhack. Steeple-bush.

Less widely distributed than the former, but quite common in the southern counties. Found growing in wet situations. A handsome shrub with purple flowers gathered in dense panicles. Both species of this genus are worthy of cultivation as ornamental shrubs.

Flowers from July until October.

Kosciusko (Coulter); Daviess (Clements); Cass (Hessler); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Steuben (Bradner).

ARUNCUS Adans.

A. ARUNCUS (L.) Karst. Goat's-beard.

(*Spiraea Aruncus* L.)

Frequent in many counties growing in rich, damp soils. Most frequently found on banks and bluffs of streams.

Flowers from May through July.

Kosciusko (Coulter); Monroe (Blatchley); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor).

PORTERANTHUS Britton.

P. TRIFOLIATUS (L.) Britton. Indian Physic. Bowman's Root.

(*Gillenia trifoliata* Moench.)

In rich soils in shaded places in the southern counties. Probably of somewhat wider distribution than the citations indicate.

Flowers in May and June.

Gibson and Posey (Schneck); Clark (Baird and Taylor).

P. STIPULATUS (Muhl.) Britton. American Ipecac.

(*Gillenia stipulacea* Nutt.)

In similar situations as the preceding, though of somewhat wider range in the State, being reported as far north as Tippecanoe County. It closely resembles the preceding species in general aspect, the most striking difference being in the pubescence and size of stipules.

Flowers in June and July.

Tippecanoe and Floyd (Barnes); Clark (Baird and Taylor); Gibson (Schneck).

RUBUS L.**R. STRIGOSUS Michx. Wild Red Raspberry.**

In dry, rather rocky soils in many counties of the State. The species does not occur in especial abundance in any of its stations, but is not infrequent. "The original of the Cuthbert and Hansall raspberries" (Britton and Brown).

Flowers in May and June; fruit ripens in July and August.

Tippecanoe (Cunningham); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Dearborn (Collins); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Marion; Steuben (Bradner).

R. OCCIDENTALIS L. Black Raspberry.

Of wide range and quite abundant throughout the State. This species is the common form in the State, growing freely at the borders of fields and thickets and in waste places. The fruit is quite largely marketed. "The original of the Gregg, Hilborn and other raspberries" (Britton and Brown).

Flowers in April and May; fruit ripens in July.

Tippecanoe (Cunningham); Kosciusko (Coulter); Putnam (MacDougal); Jefferson (Barnes); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Monroe and Vigo (Blatchley); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

R. AMERICANUS (Pers.) Britton. Dwarf Raspberry.

(*R. triflorus* Richards.)

This northern form is reported only from the northern tier of counties, where it is found in swamps and wet places. Abundant locally.

Flowers in May and June; fruit ripens in July and August.

Lake (Hill); Steuben (Bradner).

R. VILLOSUS Ait. High Bush Blackberry.

The common form in the State; very abundant and very variable. It is usually found in dry soils and frequently covers wide areas to the almost entire exclusion of other plants. The quality of the fruit varies with its situation, being as a rule larger, more pulpy and sweeter when growing in shaded places. The berries are shipped from the southern counties of the State by carloads.

Flowers in May and June; fruit ripens in July and August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyneke); Dearborn (Collins); Knox (Spillman); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

R. HISPIDUS L. Running Swamp Blackberry.

In marshes and low grounds; also in damp, flat woods, usually in grassy places. Not abundant. The berry consists of but a few grains.

Flowers in May and June.

Jefferson (Barnes); Clark (Baird and Taylor); Noble (Van Gorder); Monroe and Vigo (Blatchley); Steuben (Bradner).

R. BAILEYANUS Britton.

(*R. villosus humifusus* T. and G.)

A trailing form found in sandy soil in the southern counties. Difficult to separate from *R. Canadensis*, with which it intergrades.

Flowers in May and June; fruit ripens in July.

Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Gibson and Jefferson.

R. CANADENSIS L. Dewberry. Low Blackberry.

A trailing form found in rocky situations or in coarse gravel soils in many parts of the State; especially abundant southward. The fruit is much sweeter and of better flavor than that of *R. villosus*, but is too soft to bear long shipments.

Flowers in April and May; fruit ripens early in July.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); St. Joseph (Rothert); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Cass (Hessler).

FRAGARIA L.**F. VIRGINIANA Duchesne. Scarlet Strawberry.**

This includes all forms referred to *F. Virginiana Illinoensis* Gray. The plant is found in all parts of the State, though rarely in great abundance. In our area it is usually found in moist, rich, shaded places, although at times growing in dry soils.

Flowers from April through June.

Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Tippecanoe (Cunningham); Daviess (Clements); Fayette (Hessler); Knox (Spillman); Kosciusko (Coulter); Decatur and Shelby (Ballard); Marion; Steuben (Bradner); Monroe.

F. VESCA L. European Wood Strawberry.

Found in several counties, chiefly southern, growing in dry, sandy or gravelly soils. Quite frequent in the stations in which it occurs.

Flowers in April and May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Hamilton and Marion (Wilson).

POTENTILLA L.**P. ARGUTA Pursh. Tall Cinquefoil.**

In dry upland soils, chiefly sandy or gravelly, in the northern part of the State.

Flowers in June and July.

Steuben (Bradner).

P. ARGENTEA L. Hoary Cinquefoil.

In dry, sandy soils in the northern counties of the State. Not of common occurrence.

Flowers from May through August.

St. Joseph (Barnes); Noble (Van Gorder); Lagrange (Blatchley); Steuben (Bradner).

P. MONSPELIENSIS L. Rough Cinquefoil.

(*P. Norvegica* L.)

Widely distributed and generally abundant. In cultivated fields it is frequently an annoying weed. More plentiful in the northern than in the southern counties.

Flowers from June through August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass and Fayette (Hessler); Jefferson (J. M. Coulter); Gibson (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Vermillion (Wright); Monroe and Vigo (Blatchley); Putnam (MacDougal); Steuben (Bradner).

P. FRUTICOSA L. Shrubby Cinquefoil.

Common in rich alluvial soils in the northern counties. Chiefly found near marshes and in the lowlands about lakes. Very troublesome in low fields in many places.

Flowers from June through September.

Kosciusko (Coulter); Cass (Hessler); Lagrange (Blatchley); Noble (Van Gorder); Lake; Steuben (Bradner).

P. ANSERINA L. Goose-tansy.

Found only along the southern shores of Lake Michigan as a constituent of the flora of the sand dunes.

Flowers from May through August.

Lake (Hill); Porter (Cowles).

P. CANADENSIS L. Five-finger.

Common in dry soils throughout the State. It is very abundant in wornout or exhausted fields, frequently covering acres. Locally it is more commonly known as "wild strawberry." Its habit of spreading by runners usually insures a wide extension where it has obtained a foothold.

Flowers from May through July.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Cowles); Jefferson (Barnes); Putnam (MacDougal); Jay, Dela-

ware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Vermillion (Wright); Monroe and Vigo (Blatchley); Fayette (Hessler); Knox (Spillman); St. Joseph (Rotherth); Hamilton and Marion (Wilson).

COMARUM L.

C. PALUSTRE L. Marsh Five-finger.

(*Potentilla palustris* Scop.)

In sphagnum swamps and peat bogs in a few of the northern counties. Frequent but not abundant. Our northern counties represent about the southern limit of the species.

Flowers in June and July.

Lake and St. Joseph (Blatchley); Noble (Van Gorder); Steuben (Bradner); Marshall (Hessler).

WALDSTEINIA Willd.

W. FRAGARIOIDES (Michx.) Tratt. Barren Strawberry.

Occasional in woods and on shaded hillsides in the central and southern counties of the State. No definite reports of stations are in my hands, but several herbarium specimens attest its presence in the State.

Flowering season, May and June.

GEUM L.

G. RIVALE L. Purple or Water Avena.

This interesting northern form was added to the State flora by Mr. W. B. Van Gorder, who collected it in swamp regions in northern Indiana. It will probably be found in similar situations in other northern counties.

Collected in flower June 17.

Noble (Van Gorder).

G. VERNUM (Raf.) T. and G. Spring Avena.

Widely distributed through the State in low, wet grounds in shaded places. Usually abundant in the stations in which found.

Flowers from May until August.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo and Monroe (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Daviess (Clements); Fayette (Hessler); Knox (Spillman); Hamilton and Marion (Wilson).

G. CANADENSE Jacq. White Avens.*(G. album Gmelin.)*

Borders of woods and thickets in shaded places, throughout the State. Abundant wherever found.

Flowers from May through August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

G. VIRGINIANUM L. Rough Avens.

In low, wet grounds in many counties of the State. Usually abundant in stations where found.

Flowers in May and June.

Kosciusko (Coulter); St. Joseph (Barnes); Jay, Delaware, Randolph and Wayne (Phinney); Jefferson (J. M. Coulter); Noble (Van Gorder); Franklin (Meyncke); Fayette (Hessler); Knox (Spillman); Steuben (Bradner).

G. MACROPHYLLUM Willd. Large-leaved Avens.

Reported from the southern part of the State as occurring at the borders of open, rich woods.

Flowering specimens collected in June.

Vigo (Blatchley).

G. STRICTUM Ait. Yellow Avens.

In low, damp grounds and in the borders of marshes in various counties. Not abundant in any of its stations.

Flowers in June and July.

Kosciusko (Coulter); Jefferson (Barnes); Clark (Baird and Taylor); Tippecanoe (Cunningham); Steuben (Bradner).

ULMARIA Hill.**U. RUBRA Hill. Queen-of-the-Prairie.***(Spiraea lobata Jacq.)*

Found in various counties of the State in wet places about lakes and in damp meadows and prairies.

Flowers in June and July.

Tippecanoe (Cunningham); Cass (Hessler); Wabash and Vigo (Blatchley); Jefferson (J. M. Coulter); Jay, Delaware, Randolph and Wayne (Phinney); Scott; Marion (Wilson).

AGRIMONIA L.

A. MOLLIS (T. and G.) Britton. Soft Agrimony.

(*A. Eupatoria mollis* T. and G.)

Common in many parts of the State in dry soils. Frequent in thickets and along fence rows, as well as in light woods.

Flowers from June through August.

Monroe and Vigo (Blatchley); Fayette (Hessler); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Putnam (MacDougal); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck).

A. PARVIFLORA Soland. Small-flowered Agrimony.

In many parts of the State in various situations. At times it is found as a dominant plant in low, alluvial lands about lakes. It is also of frequent occurrence along gravelly banks and on roadsides.

Flowering season, July through September.

Kosciusko (Coulter); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Fayette (Hessler); Jefferson, Hamilton and Marion (Wilson); Steuben (Bradner).

A. STRIATA Michx. Woodland Agrimony.

Frequent in Hamilton and Marion counties in dry woods, upon the authority of Mr. G. W. Wilson.

Flowers in July and August.

SANGUISORBA L.

S. CANADENSIS L. Great Burnet.

(*Poterium Canadense* Gray.)

Found sparingly in southern part of the State by "borders of ditches and prairies in moist soil." (Blatchley.) Records of the occurrence of this form are rare, although the species is of somewhat frequent occurrence in the southern counties.

Flowers from August until October.

Vigo (Blatchley).

ROSA L.

R. SETIGERA Michx. Climbing Rose. Prairie Rose.

Borders of thickets and in open places in many counties of the State. Usually found in soil of good quality.

Flowers in June and July.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Franklin (Meyneke); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Steuben (Bradner).

R. BLANDA Ait. Smooth or Meadow Rose.

In a few localities in the rocky hills of southern counties. Found in damp, rather cold soil.

Flowering in June and July.

Dearborn (Collins); Clark (Baird and Taylor).

R. ACICULARIS Lindl. Prickly Rose.

R. Englemanni S. Wats.

Reported from Lake County by Rev. E. J. Hill and from Lake and Porter counties by Dr. H. C. Cowles. The species is quite abundant in these two counties but has not been reported from any other counties in the State.

Flowers in June and July.

R. CAROLINA L. Swamp Rose.

Rather common in various parts of the State, growing in dense clumps at times in the borders of swamps and in low, wet grounds.

Flowering season, from June through August.

Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Vigo and Monroe (Blatchley); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

R. HUMILIS Marsh. Pasture Rose.

Frequent in the southern counties of the State in dry, usually sandy or gravelly soils. At times the species almost entirely covers dry, sterile embankments.

Flowers from May until late in July.

Daviess (Clements); Monroe and Vigo (Blatchley); Knox (Spillman).

R. HUMILIS LUCIDA (Ehrh) Best.*(R lucida Ehrh)*

Much more widely distributed and more abundant than the type. In our area, this is our common wild rose. Found in various situations, but most frequently in dry, sandy or rocky soils.

Flowers from May until in July.

St. Joseph (Barnes); Monroe (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Noble (Van Gorder); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Vermillion (Wright); Daviess (Clements); Tippecanoe (King); Hamilton and Marion (Wilson); Steuben (Bradner).

R. RUBIGINOSA L. Sweet Briar.

Frequent in the southern counties, becoming less frequent northward. Found in waste places and along roadsides in dry soil.

Flowering season, from June through August.

Jefferson (Barnes); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Dearborn (Collins); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

R. NITIDA Willd. Northeastern Rose.

Found somewhat sparingly throughout the State, growing in low, damp grounds. While frequently met, it is never so abundant as some of the other species of the genus.

Flowers in June and July.

POMACEÆ. Apple Family.**MALUS Juss.****M. ANGUSTIFOLIA (Ait.) Michx. Narrow-leaved Crab Apple. Southern Crab Apple.***(Pyrus angustifolia Ait.)*

Found sparingly in the southern part of the State, growing in rather dry thickets and woods. A small tree reaching a height of from fifteen to twenty feet and a diameter of from six to ten inches.

Flowering season, April and May.

Jefferson (Barnes); Gibson and Posey (Schneck).

M. CORONARIA (L.) Mill. American or Wild Crab Apple.*(Pyrus coronaria L.)*

This species is widely distributed through the State, being especially abundant in the southern counties. It is found in various soils, but reaches its best development in rich, low woods. Largely cultivated because of its fragrance in flowering season. The wood, which is hard and heavy, is somewhat used in making handles for tools.

Flowers in April and May.

Tippecanoe and Kosciusko (Coulter); Jefferson (Barnes); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Noble (Van Gorder); Vermillion (Wright); Knox (Spillman); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

ARONIA Pers.**A. ARBUTIFOLIA (L.) Ell. Red Chokeberry. Dogberry.***(Pyrus arbutifolia L. F.)*

In marshy regions or damp woodlands in many counties of the State. A branching shrub of from six to eight feet in height, bearing a bright red fruit.

Flowering season, from March until in May.

Jefferson (J. M. Coulter); Vigo (Blatchley); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney).

A. NIGRA (Willd.) Britton. Black Chokeberry.*(Pyrus arbutifolia melanocarpa Hook.)*

Found less commonly than the preceding and less widely distributed. Found in lowlands. Fruit a purple black at maturity.

Flowers from April through June.

Cass (Hessler); Steuben (Bradner); Lake and Fulton (Blatchley).

AMELANCHIER Medic.**A. CANADENSIS (L.) Medic. June Berry. Service Berry.**

Generally distributed throughout the State, but nowhere frequent. Found usually in dry situations.

Flowers from March until May; fruit ripens in July.

Tippecanoe (Cunningham); Cass (Hessler); Monroe (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Jefferson (J. M. Coulter); Jay (Phinney); Franklin (Meyncke); Hamilton (Wilson); Steuben (Bradner); Lake.

A. BOTRYAPIUM (L. f.) DC. Shad Bush.*(A. Canadensis oblongifolia T. and G.)*

In swamps and low soil in various parts of the State. Also found in rocky soil and on limestone cliffs. Frequent but nowhere abundant. Its habit with us is that of a shrub, although it sometimes reaches a height of twenty-five feet. The wood is very hard and susceptible of a high polish, but is not used in manufactures.

Flowers in April and May; fruit ripens in July.

Cass (Hessler); Monroe and Vigo (Blatchley); Lake, Delaware, and Randolph.

A. ROTUNDIFOLIA (Michx.) Roem.*(A. Canadensis rotundifolia Michx.)*

Found sparingly in woods and thickets in the northern counties.

Fruit ripens in August.

Steuben (Bradner); Lake (Blatchley).

CRATÆGUS L.**C. CRUS-GALLI L. Cockspur Thorn.**

Found throughout the State in thickets and woodlands. One of the most common species of this very puzzling genus. A large shrub with numerous, slender thorns from two to four inches in length.

Flowers in May and June.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Putnam (MacDougal); Knox (Spillman); Hamilton (Wilson).

C. PUNCTATA Jacq. Large-fruited Thorn.

Less widely distributed than the preceding, but quite abundant in the localities in which it is found. Found in thickets and on open wooded slopes. Fruit nearly an inch in diameter, red or yellow at maturity.

Flowers in May and June.

Tippecanoe (Cunningham); Putnam (MacDougal); Jefferson (Barnes); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Monroe and Vigo (Blatchley); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

C. COCCINEA L. Red Haw.

Found abundantly in all parts of the State. It grows in various situations, but reaches its best development in low, rich soils in shaded places. It is found generally as a small tree, though frequently occurring as a shrub. The fruit is about a half-inch in diameter and red at maturity. It ripens in August, but is more or less astringent in taste.

Flowers in April and May.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jennings (Barnes); Jefferson (J. M. Coulter); Vigo and Monroe (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Dearborn (Collins); St. Joseph (Rothert); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ROTUNDIFOLIA (Ehrh.) Borck. Glandular Thorn.

Much resembling the preceding species, but with smaller leaves and more slender spines.

Flowers in April and May. First separated from *C. coccinea* by Mr. Blatchley.

Marion County.

C. MOLLIS (T. and G.) Scheele. Red-fruited Thorn.

(*C. coccinea mollis* T. and G.)

Confined to the southern counties of the State where it is found growing along the borders of streams and on open hillsides in rich soil. Not abundant. Similar in habit to the preceding species.

Flowers in April and May; fruit ripens in July.

Jefferson (Barnes); Gibson (Schneck); Monroe and Vigo (Blatchley); Marion, Hamilton (Wilson); Steuben (Bradner); Elkhart.

C. TOMENTOSA L. Black Haw. Pear Haw.

Well distributed throughout the State, usually growing in rich soils along streams and often forming dense thickets. Either a shrub or small tree. Wood hard and heavy, but of no economic value.

Flowers in May and June.

Elkhart and Jefferson (Barnes); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Marion; Hamilton (Wilson); Steuben (Bradner).

C. FLAVA Ait. Summer or Yellow Haw.

This species is of occasional occurrence in the State. Specimens received from the southeastern part of the State during the past season are to be referred to this species. Its occurrence in our area is exceptional. It grows in dry, sandy soil, in shaded places.

Flowering specimens collected in May.

Dearborn (Collins).

DRUPACEÆ. Plum Family.**PRUNUS L.****P. AMERICANA Marsh. Wild Yellow or Red Plum. Horse Plum.**

Well distributed through the State, but nowhere especially abundant. It is usually found along streams in rich soils. It rarely exceeds a trunk diameter of twelve inches. The wood is very strong and susceptible of a high polish. It is largely used in the manufacture of handles for tools.

Flowers in April and May; fruit ripens in August and September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. ANGUSTIFOLIA Michx.

(*P. Chicasa* Michx.)

Of rare occurrence in the southwestern counties of the State. It is reported as growing on dry, rather rocky slopes. I have seen no specimens and the species is admitted upon the authority of the collectors.

Flowers in April; fruit ripens in July.

Gibson (Schneck).

P. PUMILA L. Sand Cherry. Dwarf Cherry.

Found only on the southern shore of Lake Michigan. The species is a member of the dune flora, and according to Dr. Cowles plays a certain part as a dune builder.

Flowers in April and May; fruit ripens in August.

Porter (Cowles); Lake.

P. PENNSYLVANICA L. f. Wild Red Cherry.

Exceptionally found in a few counties of the State, in dry, coarse soils. Usually not exceeding twenty-five feet in height.

Flowering in May and June; fruit ripens in August.

Kosciusko (Chipman); Jay, Delaware, Randolph, and Wayne (Phinney).

P. VIRGINIANA L. Choke Cherry.

Not abundant, but reported from many counties. It is found along the rocky banks of streams and on limestone bluffs. In our area it only exceptionally takes on the arborescent habit usually occurring as a small shrub from six to eight feet in height.

Flowers in April and May; fruit ripens in August.

Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Monroe (Blatchley); St. Joseph (Rothert); Marion and Tippecanoe; Steuben (Bradner).

P. SEROTINA Ehrh. Wild Black Cherry. Rum Cherry.

A tree quite largely distributed throughout the State. It reaches its largest size perhaps in rich upland soils in the southern counties of the State. Its great value in interior finish and cabinet work is rapidly thinning out the larger specimens, and in some counties where once abundant it is almost extinct. The wilted leaves and twigs of this species if eaten by stock produce serious and even fatal cases of poisoning. The bark is largely used medicinally, and the fruit is in some localities used for the table.

Flowers in May; fruit ripens in August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyneke); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

MIMOSACEÆ. Mimosa Family.

ACUAN Adans.

A. ILLINOENSIS (Michx.) Kuntze.

(*Desmanthus brachylobus* Benth.)

This southern and western form is credited to Indiana in the 6th edition of Gray's Manual, page 149, but it is certainly not of general occurrence. Abundant herbarium specimens are in hand from Clark County, the collections of Baird and Taylor, and Dr. Barnes. I have seen specimens from no other region. In my opinion the form is of rare occurrence in the southern and southwestern counties. If found it would probably be on alluvial banks or in prairies.

CÆSALPINACEÆ. Senna Family.**CERCIS L.****C. CANADENSIS L. Red-bud. Judas-tree.**

Abundant throughout the State, especially developed in point of numbers in limestone hill regions. Its maximum development as to size is in the southern counties in moist, rich soil. When present in numbers or of large size, it is indicative of rich soil. While growing well in clay soils, it finds its best situation in loam. Wood exceedingly hard and close grained.

Flowers in April and May. Scarcely less handsome in fruit in August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Dearborn (Collins); Jay, Delaware, Randolph and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Marion and Hamilton (Wilson); Steuben (Bradner).

CASSIA L.**C. NICTITANS L. Sensitive Pea. Wild Sensitive-plant.**

Chiefly in the southern counties of the State, growing in dry, sterile places. Not abundant in any locality.

Flowers in August and September.

Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Jefferson (Barnes); Fayette (Hessler); Monroe (Blatchley); Round Lake (Deam); Floyd (Barnes).

C. CHAMÆCRISTA L. Partridge Pea. Large-flowered Sensitive Pea.

Dry sand or clay soils. Somewhat common in southern counties, but not extending farther north than Tippecanoe according to reports.

Flowering season July and August.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Daviess (Clements); Jefferson (Barnes); Franklin (Meyncke); Clark (Baird and Taylor); Vigo (Blatchley); Floyd (Barnes); Hamilton and Marion (Wilson).

C. TORA L. Low Senna.

Found in Floyd County by Dr. Clapp, no data as to station. I have found no other citation for the State. The specific inclusion of Indiana in the range of this species both in Gray's Manual and Britton and Brown doubtless rests on this collection. If rediscovered it will probably be found along the banks of streams.

C. MARYLANDICA L. Wild or American Senna.

Quite common, especially in the southern counties in alluvial or moist, rich soils. It is also found on sand or gravel bars. The most widely known member of the genus within the State.

Flowering season from middle of June until September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clemons); Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Dearborn (Collins); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Noble (Van Gorder); Fayette (Hessler); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

C. OCCIDENTALIS L. Coffee Senna.

In waste places, usually in sandy soils in the central and southern part of the State. Especially abundant in the region of the Knobs.

Flowers in July and August.

GLEDITSIA L.**G. TRIACANTHOS L. Honey Locust. Thorn Tree.**

Generally distributed, but never constituting any large per cent. of the forest forms. It is indicative of rich soil. It reaches its greatest development in size in the State in the lower Wabash valley. Dr. Schneck reports the following measurements of a specimen from that region: "Circumference three feet from the ground, eighteen feet; height from roots to first branch, sixty-one feet; total height, one hundred twenty-nine feet." The wood is very heavy, hard, and durable in contact with the soil. It is largely used locally for posts, rails and wagon hubs. Its true value is, however, scarcely appreciated. Low, rich, bottom lands, more rarely on dry, sterile hills.

Flowers in May and June.

Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Clark (Baird and Taylor); Daviess (Clements); Dearborn (Collins); Franklin (Meyncke); Noble (Van Gorder); Tippecanoe and Kosciusko (Coulter); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

G. AQUATICA Marsh. Water or Swamp Locust.

Found only in the cypress swamps in the southwestern counties of the State, and not abundant there. A small tree of no economic value.

Flowers in June and July.

Gibson and Posey (Schneck); Knox (Ridgway).

GYMNOCLADUS Lam.

G. DIOICA (L.) Koch. Coffee nut. Kentucky Coffee Tree.
(*G. Canadensis* Lam.)

Usually found in rich woods and bottoms. It is somewhat sparsely distributed in the northern counties of its range, becoming more common southward and attaining its greatest numbers in the rich bottom lands of the Ohio River.

Not used locally except for posts and rails, for which its durability in contact with the ground specially fits it. Its liability to check in drying prevents its general use in manufacture, although it is sometimes used in cabinet making. It is a large tree, ranging from 80 to 100 feet high, with a diameter of from eighteen inches to three feet.

Flowering season, May and June. A more interesting object when in fruit.

Tippecanoe (Cunningham); Steuben (Bradner); Laporte; Kosciusko (Coulter); Cass (Hessler); Putnam (MacDougal); Franklin (Meyncke); Jefferson (Barnes); Dearborn (Collins); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Marion and Hamilton (Wilson).

PAPILIONACEÆ. Pea Family.

BAPTISIA Vent.

B. AUSTRALIS (L.) R. Br. Blue False-Indigo.

Reported only from the southern counties, where it grows on the banks of the Ohio River in rich soil. Jefferson (J. M. Coulter); Clark (Baird and Taylor).

B. ALBA (L.) R. Br.

Of rare occurrence in dry soil in southern counties. The only herbarium specimens are in the collection of Dr. Clapp, made in Floyd County in 1839. The station was in the "Knobs" near New Albany.

B. TINCTORIA (L.) R. Br. Wild Indigo.

Sparingly found in dry, drift soil in the northern counties. The species is an undoubted member of our flora, but is very erratic in its behavior. It appears one year in fair abundance, then may not be found again for several years.

Flowers from June through August.

Steuben (Bradner).

B. BRACTEATA Ell.

(*B. leucophoea* Nutt.)

In dry prairies in the northern part of the State; of exceptional occurrence.

Flowers in April and May.

Steuben (Bradner).

B. LEUCANTHA Torr. and Gray.

Found in moist prairies or on bottom lands somewhat abundantly in the southern part of the State, more sparingly in the northern.

The flowering season extends from June into September.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Franklin (Meynke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Cass (Hessler); Vigo (Blatchley).

CROTALARIA L.**C. SAGITTALIS L. Rattle-box.**

Occurring in sterile prairie soil. Reported as rare in Gibson and Posey counties by Dr. Schneck, this being its only reported station.

Flowers in July and August.

LUPINUS L.**L. PERENNIS L. Wild Lupine.**

Occurring in sandy soil in a few northern counties.

Cass (Hessler); St. Joseph (Rothert); Noble (Van Gorder); Lake (Hill).

The variety *occidentalis* S. Wats. occurs in Steuben County, according to Mr. Bradner.

MEDICAGO L.**M. SATIVA L. Lucerne. Alfalfa.**

Occasionally found, probably as an escape. In Tippecanoe it maintains itself well and is spreading with considerable rapidity on light, thin soil.

Tippecanoe (Wright); Dearborn (Collins); Steuben (Bradner); Lake (Hill).

M. LUPULINA L. Black Medick. Nonesuch.

Somewhat frequent in waste places and along streets in various counties of the State. As a rule where found at all it is quite abundant.

Its flowering season is from May to August.

Tippecanoe; Franklin (Meyncke); Clark (Baird and Taylor); Marion; Monroe and Vigo (Blatchley); Fayette (Hessler); Steuben (Bradner).

MELILOTUS Juss.**M. ALBA Desv. Sweet Clover. White Melilot.**

Extremely abundant in waste places and cultivated fields throughout the State. In some places so abundant as to be ranked among the most annoying weeds. It is largely used as a household remedy.

It begins to bloom in June and continues until the frosts.

Tippecanoe (Cunningham); Kosciusko (Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Marion; Monroe and Vigo (Blatchley); Jefferson (Barnes); Hamilton and Monroe (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

M. OFFICINALIS Willd. Yellow Melilot.

Not nearly so abundant as the former, occurring in dry or alluvial soils.

Flowering season much the same.

Tippecanoe (Cunningham); Dearborn (Collins); Marion; Decatur and Shelby (Ballard); Knox (Spillman); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

TRIFOLIUM L. Clover. Trefoil.**T. AGRARIUM L. Yellow or Hop-clover.**

This eastern form has obtained a footing in the eastern counties, being found along roadsides in dry, rather sandy soil.

Randolph (Phinney); Dearborn (Collins).

T. PROCUMBENS L. Low Hop-clover.

Found in sterile, sandy fields in a few counties, in considerable abundance.

Flowering season commences in May and continues through the summer.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Dearborn (Collins); Decatur (Ballard); Steuben (Bradner); Crawford (Blatchley).

T. ARVENSE L. Rabbit-foot or Stone Clover.

Found in dry soil, usually preferring clay, chiefly in the western part of the State.

Blooms in July and August.

Dubois (Barnes); Marshall and Monroe (Blatchley); Clark (Baird and Taylor); Daviess (Clements); Noble (Van Gorder); Kosciusko (Chipman); Steuben (Bradner); Marshall (Hessler).

T. PRATENSE L.

Abundant everywhere, occurring in meadows and open woods. Much of its local distribution due to escape from cultivation. Reported practically from every county in the State.

T. REFLEXUM L. Buffalo Clover.

Rare in the southern counties, where it occurs in dry, sandy soil, either on hillsides or prairies.

Flowers in May.

Vigo (Blatchley); Gibson and Posey (Schneck); Franklin (Meyneke); Marion.

T. STOLONIFERUM Muhl. Running Buffalo Clover.

Admitted upon authority of State Catalogue (Editors Bot. Gaz.), on a citation from Marion County by the late Herbert E. Copeland. So far as I have been able to learn, this is the only report of the species within our bounds.

T. HYBRIDUM L. Alsike Clover.

Very much resembling *T. repens*, from which it is rarely distinguished. In certain parts of the State, notably in Kosciusko and adjoining counties, it is rapidly replacing the latter form. It is becoming quite common in the northern part of the State, less frequent in the central portions, and is entirely absent from the extreme southern counties.

Kosciusko (Chipman); Decatur (Ballard); Noble (Van Gorder); Hamilton (Wilson); Steuben (Bradner).

T. REPENS L. White Clover.

Common everywhere and growing under most diverse conditions. Its distribution in our area is probably entirely due to cultivation. In certain waste areas in the State, which have never been cultivated, it is entirely absent, although the conditions for its growth seem exceptionally favorable. Reported practically from every county in the State.

PSORALEA L.**P. STIPULATA T. and G. Large-stipuled Psoralea.**

Confined to limestone rocks in the extreme southern counties of the State. It occurs in Jefferson and Clark counties sparingly. No other stations are reported.

It flowers in the localities indicated in June.

P. PEDUNCULATA (Mill.) Vail

(*P. melilotoides* Michx.)

This form has come into our flora from the south and is confined to the southern portion of the State. It grows in dry, usually sandy soil.

Flowering late in May or early in June.

Jefferson (Coulter); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

P. ONOBRYCHIS Nutt.

More generally distributed than the other species of this genus, but not extending farther north than Tippecanoe and Cass counties. Found in moist or sandy soils, more abundant in the southern part of its range.

Flowers in May and June.

Tippecanoe (Cunningham); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Carroll; Daviess (Clements); Cass (Hessler).

AMORPHA L.

A. FRUTICOSA L. False or Bastard Indigo.

In wet soils, but more frequently along the banks of streams, whence the name "river locust" sometimes given the plant. Its reported stations are all in the southern half of the State. According to Dr. Schneck, the leaves when bruised exhale a strong, unpleasant odor.

Flowers in May and June.

Vigo and Parke (Blatchley); Gibson and Posey (Schneck); Franklin (Meyneke); Knox (Spillman).

A. NANA Nutt. Fragrant False Indigo.

(*A. microphylla* Pursh.)

A single station of what I take to be this species is found on the second terrace of Eagle Lake, Kosciusko County. The terrace is drift sand and is so steep as to scarcely furnish a foothold for grass. I have studied the plant closely for five seasons, and am convinced that it is *A. nana*. Not having compared the material with specimens from the normal range of the plant, it is admitted tentatively. The recorded range of the species is altogether west of the Mississippi River.

A. CANESCENS Pursh. Lead Plant. Shoestrings. Wild Tea.

Not especially abundant, but occurring in sandy or gravelly soils in several widely separated counties. It is usually found in dry situations, but at times works its way into low, wet lands immediately adjoining the ridges or banks which it frequents.

Flowers in June and July.

Tippecanoe (Cunningham); White (Hussey); Kosciusko and Marshall (Coulter); Cass (Hessler); Jasper (Barnes); Steuben (Bradner); Lake and Vigo (Blatchley).

KUHNISTERA Lam.

K. CANDIDA (Willd.) Kuntze. Wild Prairie Clover.

(*Petalostemon candidus* Michx.)

In dry, sandy soil in the central and southern parts of the State. Nowhere abundant.

Flowering in June and July.

Cass (Hessler); Jasper (Barnes); White (Hussey); Tippecanoe (Coulter); Vigo (Blatchley).

K. PURPUREA (Vent.) MacM. Violet Prairie Clover.*(Petalostemon violaceus Michx.)*

More widely distributed and much more abundant than the preceding. Dry places and in prairies.

Flowers in June and July.

Tippecanoe (Cunningham); Daviess (Clements); Cass (Hessler); Vigo (Blatchley); St. Joseph and Jasper (Barnes); White (Hussey); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Kosciusko (Coulter).

CRACCA L.**C. VIRGINIANA L. Cat-gut. Goat's-rue.***(Tephrosia Virginiana Pers.)*

In sandy soils throughout the State, being more abundant in the northern parts. As a liana it is a prominent member of the basswood dunes along the southern shores of Lake Michigan. While more abundant in the north, it is of much larger size in the south and more frequently occurs as an erect shrub.

Flowering season, May and June.

Cass (Hessler); Knox and Vigo (Blatchley); Jefferson (Barnes); Clark (Baird and Taylor); Noble (Van Gorder); Lake, Porter, and Laporte; Steuben (Bradner).

KRAUHNIA Raf.**K. FRUTESCENS (L.) Greene. American Wistaria.***(Wistaria frutescens Poir.)*

In low, wet grounds, occurring sparingly at two widely separate localities, viz., Gibson and Posey counties (Schneck); Jay (Phinney); Kosciusko (Coulter).

It blooms in June, and in its northern range is a trailing shrub.

ROBINIA L.**R. PSEUDACACIA L. Black or Yellow Locust. False Acacia.**

Common throughout the State through planting and naturalization. It suffers greatly in certain seasons from the attacks of the locust borer (*Cyrtene picta*). The dense, hard wood is of great value and from an economic standpoint has few superiors. Locally it is principally used for posts and wagon hubs. There are records of posts of this species that have been set over fifty years and are yet sound. Its best development is along streams and in black, sandy loam. Its soil requirements seem about those

of the black walnut. In such localities it reaches a diameter of nearly two feet. It also occurs in dry, sandy or gravelly soil, but in much less perfect development. The early shedding of the leaves is a serious objection to its use in lawns or yards.

It flowers from early in May till in June, depending upon its location.

Daviess (Clements); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Monroe and Vigo (Blatchley); Putnam (MacDougal); Decatur and Shelby (Ballard); Steuben (Bradner).

ASTRAGALUS L.

A. PLATTENSIS Nutt.

This species is credited to Indiana in the Manuals of Gray and Britton and Brown. So far as I am able to discover, the species has been reported from but one station, Lafayette Junction in Tippecanoe County. It was only once found in this station, but abundant herbarium material confirms its appearance at that time. It was probably brought in by the railroads, and maintained itself for a single season on the dry, gravelly hills characterizing its station. It is certainly not of general occurrence in the State.

A. CAROLINIANUS L. Carolina Milk-vetch.

(*A. Canadensis* L.)

Quite common along streams and lake margins in various counties of the State.

In July and August, when in full bloom, it is one of the most conspicuous plants in the regions in which it occurs.

Kosciusko (Coulter); Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder).

STYLOSANTHES Sw.

S. BIFLORA (L.) B. S. P. Pencil-flower.

(*S. elatior* Swartz.)

Very rare in our bounds. Three stations are reported. From the "barrens" near Palmyra (Barnes) and from Gibson and Posey (Schneck). In all cases the form occurred in dry soil and was noted as rare.

Crawford (Blatchley).

MEIBOMIA Adans.

M. NUDIFLORA (L.) Kuntze. Naked-flowered Tick Trefoil.*(Desmodium nudiflorum DC.)*

Widely distributed throughout the State, occurring in dry soils, usually in rocky, open woods or in thickets. I have found it in splendid development, however, in extremely wet lowlands.

It flowers in July and August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton (Wilson); Round Lake (Deam); Steuben (Bradner).

M. GRANDIFLORA (Walt.) Kuntze. Pointed-leaved Tick Trefoil.*(Desmodium acuminatum DC.)*

Occurs over practically the same range as the preceding species. It is usually very common in woods and thickets, not being able to maintain itself in the open.

Flowers from June to August.

Reported counties the same as in the last form.

M. PAUCIFLORA (Nutt.) Kuntze. Few-flowered Tick Trefoil.*(Desmodium pauciflorum DC.)*

Confined to the southern half of the State, where it is sparingly found in moist woods and thickets. It is nowhere reported as common.

Flowers from June to August.

Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler).

M. MICHAUXII Vail. Prostrate Tick Trefoil. Round-leaved Tick Trefoil.*(Desmodium rotundifolium DC.)*

In dry woods and thickets in various parts of the State.

Flowering season from latter part of July to September.

Kosciusko (Coulter); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Vigo (Blatchley); Franklin (Meyncke); Round Lake (Deam); Steuben (Bradner).

M. SESSILIFOLIA (Torr.) Kuntze. Sessile-Leaved Tick Trefoil.

(*Desmodium sessilifolium* Torr and Gray.)

Apparently absent from the central western counties, but frequent in other parts of the State. Its best development is in clay soils, although it is also found in dry, sandy locations.

Flowers from July to September.

Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Vigo (Blatchley); Lake; Steuben (Bradner).

M. CANESCENS (L.) Kuntze. Hoary Tick Trefoil.

(*Desmodium canescens* DC.)

In moist, rich soils, evidently preferring shade. Met with frequently at the borders of hedges and thickets. In Cass County according to Dr. Hessler it is found in wooded, sandy soil, an evidently exceptional situation.

Tippecanoe (Cunningham); Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Vigo (Blatchley); Jefferson; Carroll, Hamilton, and Marion (Wilson); Steuben (Bradner).

M. BRACTEOSA (Michx.) Kuntze. Large-bracted Tick Trefoil.

(*Desmodium cuspidatum* Hook.)

In dry, clay soil or at the margin of thickets, occasionally in the open prairie. Not abundant in any of the stations where it occurs.

Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Vigo (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Hamilton (Wilson); Steuben (Bradner).

M. PANICULATA (L.) Kuntze. Panicked Tick Trefoil.

(*Desmodium paniculatum* DC.)

Occurs in thickets and low grounds, having its greater abundance in the southern portion of the State.

Flowers from July to September.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Daviess (Clements); Monroe (Blatchley); Fayette (Hessler); Noble (Van Gorder); Steuben (Bradner).

M. LÆVIGATA (Nutt.) Kuntze.*(Desmodium lævigatum DC.)*

In dry woods in the southern part of the State.

Flowers in August and September.

I have specimens from Clark County, but find no other record for the State.

M. VIRIDIFLORA (L.) Kuntze. Velvet-leaved Tick Trefoil.*(Desmodium viridiflorum Beck.)*

Confined to the southern counties, where it is found in dry soils.

Flowers in August in our range.

Putnam (MacDougal); Jefferson (J. M. Coulter); Gibson (Schneck).

M. DILLENII (Darl.) Kuntze.*(Desmodium Dillenii Darl.)*

Dry, open woods and prairies.

Flowering from July to September.

Monroe and Vigo (Blatchley); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Round Lake (Deam); Hamilton and Marion (Wilson).

M. CANADENSIS (L.) Kuntze. Showy Tick Trefoil.*(Desmodium Canadense DC.)*

Not uncommon in moist thickets and woods in various parts of the State.

Flowers in July and August.

Tippecanoe (Cunningham); Daviess (Clements); Monroe and Vigo (Blatchley); Jasper (Barnes); Putnam (MacDougal); Jefferson (J. M. Coulter); Noble (Van Gorder); Franklin (Meyneke); Clark (Baird and Taylor); Laporte.

M. GLABELLA (Michx.) Kuntze.*(Desmodium humifusum Beck.)*

Sandy soil, frequent. Found upon sides of canal near Five-Mile Pond and on roadside near Heckland, Vigo County.

Collected June 15.

So far as I know, this is the only record for the State. The data given are those of Mr. Blatchley.

M. RIGIDA (Ell.) Kuntze. Rigid Tick Trefoil.*(Desmodium rigidum DC.)*

Rather common in dry, open woods.

Flowers July to September.

Floyd (Clapp); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor).

M. MARYLANDICA (L.) Kuntze. Smooth Small-leaved Tick Trefoil.*(Desmodium Marilandicum Boott.)*

Of infrequent occurrence in the southern counties of the State.

Found in open, hilly woods or in damp thickets and woodlands.

Flowers in July.

Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Vigo (Blatchley).

M. OBTUSA (Muhl.) Vail. Hairy Small-leaved Tick Trefoil.*(Desmodium ciliare DC.)*

In sandy soil or upon dry hills. Never abundant.

Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Monroe.

LESPEDEZA Michx.**L. REPENS (L.) Bart. Creeping Bush-clover.**

In the southern counties of the State in dry or sandy soils.

Very abundant in the Knobs region.

Flowers in August and September.

Jefferson, Gibson, Floyd, and Harrison.

L. PROCUMBENS Michx. Trailing Bush clover.

Not found in the northern counties, fairly distributed in the central and southern. Usually growing in dry soils, preferably those containing much sand.

Floyd (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

In the region of the Knobs in Floyd County it has been collected in bloom on May 25; its usual flowering season is, however, July and August.

L. VIOLACEA (L.) Pers. Bush-clover.

More widely distributed and more abundant than preceding species. It is found frequently on dry, clay banks, and on hill-sides and in thickets; occasionally in its northern range in sandy soil.

The flowering season is from July to August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Steuben (Bradner).

L. FRUTESCENS (L.) Britton. Wand-like Bush-clover.

(*L. reticulata* S. Wats., not Pers.)

Of fair distribution in dry, open soil, in our range preferring sand soils.

Flowers July to September.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Tippecanoe (Cunningham); Round Lake (Deam).

L. VIRGINICA (L.) Britton. Slender Bush-clover.

(*L. violacea angustifolia* T. and G.)

Probably not separated in all references from preceding species. In much the same soils and with the same flowering season.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Round Lake (Deam); Lake (Hill); Gibson.

L. HIRTA (L.) Ell. Hairy Bush-clover.

(*L. polystachya* Michx.)

Common in the localities in which it is found. Frequent in dry soil containing much clay and dry, rocky woods.

Flowers July to September.

Monroe (Blatchley); Washington (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Lake; Steuben (Bradner).

L. CAPITATA Michx. Round-headed Bush-clover.

Frequent in dry, sandy soil in various counties.

Flowers in July and August.

Floyd (Clapp); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Tippecanoe (Cunningham); Lake; Cass (Hessler); Steuben (Bradner).

L. ANGUSTIFOLIA (Pursh) Ell. **Narrow-leaved Bush-clover.**

First collected by Mr. W. S. Blatchley, growing in dry prairies in Vigo County and reported as rare. Collected in 1896 in Tippecanoe County by Miss Cunningham. Reported also from Cass by Dr. Hessler, with following note: "A single large, bushy plant was found along the railroad, east of Lake Cicott; perhaps a migrant."

Flowers in August in our range.

VICIA L.**V. CRACCA L.** **Tufted or Cow Vetch.**

Throughout the State, growing in dry soil. Not nearly so abundant as succeeding species.

Flowers in June and July.

Steuben (Bradner); Tippecanoe (Coulter).

V. AMERICANA Muhl. **American Vetch. Pea-vine.**

Restricted to moist lowlands in the northern part of the State.

Flowers from June to August.

Kosciusko (Coulter); Noble (Van Gorder).

V. CAROLINIANA Walt. **Carolina Vetch.**

River banks and along the margins of lakes. Occasionally found on wet cliffs.

Flowers in June and July.

Cass (Hessler); Franklin (Meyneke); St. Joseph (Rothert); Washington (Barnes); Clark (Baird and Taylor); Tippecanoe (Coulter); Steuben (Bradner).

LATHYRUS L.**L. MARITIMUS (L.) Bigel.** **Beach Pea. Seaside Pea.**

This form is naturally confined to the shores of Lake Michigan, where its significance as a character plant of certain beach stretches and in dune building has been indicated by Dr. Cowles. It occurs in Lake and Porter counties. Added to the flora by Rev. E. J. Hill.

L. VENOSUS Muhl. **Veiny Pea.**

The only record for the State that I am able to find is from Noble County, where the form was collected by Superintendent Van Gorder, from whom abundant herbarium material was secured. Britton and Brown mention Indiana specifically in giving the range of the plant. I scarcely believe it to be of general occurrence.

L. PALUSTRIS L. Marsh Vetchling.

Common in counties from which it is reported, except those in the southwestern part of the State. Found along streams and ditches or in wet soils.

Begins flowering in May and continues through the summer.

Tippecanoe (Hussey); Vigo (Blatchley); Gibson and Posey (Schneck); Johnson (Hubbard); Dearborn (Collins); Carroll; Hamilton (Wilson); Steuben (Bradner).

L. MYRTIFOLIUS Muhl. Myrtle-leaved Marsh Pea.

(*L. palustris myrtifolius* Gray.)

Moist soils in a few widely separate counties of the State.

Commences to flower in May and continues through the summer.

Noble (Van Gorder); Vigo (Blatchley); Knox (Spillman); Lake.

L. OCHROLEUCUS Hook. Cream-colored Vetching.

Reported only from Noble County by Mr. W. B. Van Gorder.

The herbarium material collected in June showed plants in full bloom and pods beginning to form.

Steuben (Bradner).

FALCATA Gmel.**F. COMOSA (L.) Kuntze. Wild or Hog Pea-nut.**

(*Amphicarpæa monoica* Ell.)

Common and widely distributed in the State. Occurs in moist, rich soils in shaded places.

Flowers from July until September.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Putnam (MacDougal); Franklin (Meyneke); Monroe and Vigo (Blatchley); Fayette (Hessler); Kosciusko (Coulter); Steuben (Bradner).

F. PITCHERI (T. and G.) Kuntze.

(*Amphicarpæa Pitcheri* Torr. and Gray.)

Very similar to the preceding, with which it perhaps intergrades. First reported by Mr. W. S. Blatchley from Vigo County, the station being "Coal Creek, in damp, rich soil in hillside thickets; scarce." Later reported as very common in Hamilton County by Mr. Guy W. Wilson.

APIOS Moench.

A. APIOS (L.) MacM. Ground-nut.*(A. tuberosa Moench.)*

Low, wet grounds in many counties, preferring rich soils.

Flowers from July to September.

Monroe and Vigo (Blatchley); Kosciusko (Coulter); Putnam (MacDougal); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Fayette (Hessler); Hamilton (Wilson); Steuben (Bradner).

The reports show the form to be more abundant in the northern part of its range, and especially so in the marshy thickets surrounding small lakes. In almost all of the southern counties it is relatively rare.

GALACTIA P. Br.

G. REGULARIS (L.) B. S. P. Milk Pea.*(G. glabella Michx.)*

Reported only by Dr. A. J. Phinney as occurring in the region embracing Jay, Delaware, Randolph, and Wayne counties. It is found in dry, rather sandy soils, flowering in July. I was able last season to secure specimens of this form from Wayne County.

G. VOLUBILIS (L.) Britton. Downy Milk Pea.*(G. pilosa Ell.)*

Reported only from two counties, so far as I am able to discover. In both instances it occurred in dry, sandy or gravelly soil.

It flowers with us in July.

Putnam (MacDougal); Kosciusko (Coulter).

PHASEOLUS L.

P. POLYSTACHYUS (L.) B. S. P. Wild Bean. Bean Vine.*(P. perennis Walt.)*

Common in localities in which it is found. Its most common habitat is in woods and thickets, seemingly having a wide soil range, but requiring shade.

Flowers in July and August.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Dearborn (Collins); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Monroe (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

STROPHOSTYLES ELL.

S. HELVOLA (L.) Britton. Trailing Wild Bean.*(S. angulosa Ell.)*

Apparently confined to the central and southern counties. It is found in dry soils, in open places. The soils it prefers seem to be those with heavy admixtures of sand or clay.

Flowers in August and September.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Franklin (Meyncke); Hamilton (Wilson).

S. UMBELLATUS (Muhl.) Britton. Pink Wild Bean.*(S. peduncularis Ell.)*

Confined to the southern counties of the State, growing in open or light shades, in dry, sand or clay soils.

Flowers from July to September.

Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Vigo (Blatchley); Clark (Baird and Taylor).

S. PAUCIFLORA (Benth.) S. Wats. Small Wild Bean.*(S. pauciflorus Watson.)*

Occurring only in Gibson and Posey counties, where it is found along the banks of streams. Dr. Schneck reports it as rare.

Flowers late in July and in August.

GERANIACEÆ. Geranium Family.

GERANIUM L.

G. MACULATUM L. Crane's Bill. Wild Geranium. Alum Root.

Common throughout the State in open woods and thickets. Being somewhat brought into cultivation, but not proving satisfactory on account of its very straggling growth.

Flowers from April to July.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); St. Joseph (Rothert); Decatur and Shelby (Ballard); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

G. CAROLINIANUM L. Carolina Crane's Bill.

Found abundantly in many parts of the State, but not reported as occurring north of Tippecanoe County. It grows in dry, gravelly, rather sterile soil in open places.

Flowers from April through August.

Monroe and Vigo (Blatchley); Cass and Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Tippecanoe (Cunningham); Knox (Spillman); Marion (Wilson).

ERODIUM L'Her.**E. CICUTARIUM (L.) L'Her. Stork's Bill. Heron's Bill.**

Found only in the southwestern counties in waste places. Rather local, but abundant in its stations.

Flowers from April until September.

Gibson and Posey (Schneck).

OXALIDACEÆ. Wood-sorrel Family.**OXALIS L.****O. VIOLACEA L. Violet Wood-sorrel.**

Found abundantly throughout the State in moist soils in woods or open places. A well-known form.

Flowers from April until in June.

Jefferson (Barnes); Putnam (MacDougal); Vigo and Monroe (Blatchley); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Clark (Baird and Taylor); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Knox (Spillman).

O. STRICTA L. Yellow Wood-sorrel. Sheep-sorrel.

(*O. corniculata stricta* Sav.)

Abundantly distributed throughout the State, in some localities becoming a troublesome weed. It is found in various situations, but is most plentiful and of stronger habit in moist, rich soils. The species varies largely both as to size and pubescence.

Flowers from April through September.

Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Dearborn (Collins); Daviess (Clements); Tippecanoe (Ives); Kosciusko (Coulter); Monroe and Vigo (Blatchley); Fayette (Hess-

ler); Decatur (Ballard); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

LINACEÆ. Flax Family.

LINUM L.

L. USITATISSIMUM L. Flax. Linseed.

In many counties of the State along roads and railways and also as an escape from cultivation. It maintains itself well and spreads rapidly in most parts of the State.

Flowers in June and July.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor).

L. VIRGINIANUM L. Wild Yellow Flax.

Chiefly found in the southern counties of the State in shaded places. It is found in rather dry, sandy or clayey soil, and is nowhere abundant.

Flowers from June through August.

Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Tippecanoe (Hussey); Franklin (Meyncke); Clark (Baird and Taylor).

L. STRIATUM Walt. Ridged Yellow Flax.

In the southern part of the State in wet soils. I have not seen the plant, but the species is admitted upon the authority of Dr. John M. Coulter.

Flowering specimens collected June 19.

Jefferson (J. M. Coulter).

L. SULCATUM Riddell. Grooved Yellow Flax.

Found only in the northern part of the State in dry, sandy soil.

Flowering specimens were collected on July 28.

Jasper (Barnes); Lake (Hill).

RUTACEÆ. Rue Family.

XANTHOXYLUM L.

X. AMERICANUM Mill. Prickly Ash. Toothache Root.

A small tree, sometimes reduced to a shrub, which is generally distributed over the State. It rarely reaches a height of over twenty feet and a diameter of from six to eight inches. It is

rapidly disappearing from the southwestern part of the State. The light and coarse-grained wood is valueless, but the bark is somewhat largely used medicinally. Rocky hillsides, more often along streams and rich river bottoms.

Flowers in April and May.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Dearborn (Collins); Cass (Hessler); Hamilton (Doane); Kosciusko (Coulter); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

PTELEA L.

P. TRIFOLIATA L. Hop tree. Shrubby Trefoil.

Commonly distributed throughout the State, usually in shady localities. Frequent on shady, rocky hillsides. A small tree, ranging from twelve to fifteen feet in height and with a diameter of from six to nine inches. In many parts of the State the species occurs as a shrub. The foliage leaves have an unpleasant odor when bruised; the bitter fruit is sometimes used as a substitute for hops.

Flowers in May and June.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Hamilton (Doane); Cass and Fayette (Hessler).

SIMARUBACEÆ. Ailanthus Family.

AILANTHUS Desf.

A. GLANDULOSA Desf. Tree of Heaven.

Escaped from cultivation very largely in some of the southern counties. I have seen whole hillsides completely covered with this species. It spreads especially in a coarse, rocky soil. The foliage has a fetid, disagreeable odor when bruised, and the staminate flowers are especially ill-scented.

Flowers in June and July.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Marion (Wilson); Fayette (Hessler).

POLYGALACEÆ. Milkwort Family.

POLYGALA L.

P. CRUCIATA L. Marsh Milkwort.

Found in the northern counties only, growing in moist, sandy soils.

Flowers from July until in September.

Cass (Hessler); Lake (Hill); Steuben (Bradner).

P. VERTICILLATA L. Whorled Milkwort.

Found in dry prairies or upland woods in several counties, but in none of its stations abundant.

Flowers from July until October.

Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Vigo (Blatchley); Steuben (Bradner); Tippecanoe and Crawford.

P. AMBIGUA Nutt. Loose-spiked Milkwort.

(*P. verticillata ambigua* Wood.)

Found only in the southwestern counties in dry, sand soils, usually in exposed places.

Flowers in July and August.

Gibson and Posey (Schneck).

P. VIRIDESCENS L.

(*P. sanguinea* L.)

This is, in our area, the most frequent and widely distributed species of the genus. It is found in various situations, growing either in moist, alluvial soils or in sandy soil. It seems more plentiful as a rule in sandy or gravelly soils.

Flowers from early in June until September.

Tippecanoe (Cunningham); Cass (Hessler); Jefferson (J. M. Coulter); White (Hussey); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck); Vermillion (Wright); Steuben (Bradner).

P. NUTTALLII T. and G.

Found in southern part of the State in dry, sandy soil in open places. In one locality quite abundant along a roadside for a distance of a mile or more.

Flowering from July until September.

Jefferson (J. M. Coulter).

P. SENEGA L. Seneca Snake root.

Found in very many counties of the State in rocky soils, usually in shaded localities. It is as widely distributed and almost as abundant as *P. viridescens*.

Flowers in May, continuing until September.

Jefferson (Young); Monroe (Hessler); Putnam (MacDougal); Vigo (Blatchley); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Clark (Barnes); Kosciusko (Coulter); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); St. Joseph (Rothert); Cass (Hessler); Steuben (Bradner).

P. SENEGA LATIFOLIA T. and G.

Associated with the former, but less widely distributed. Not easily separated from the type species.

Wayne (Plummer); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (Barnes); Vermillion (Wright); Vigo (Blatchley).

P. POLYGAMA Walt. Racemed Milkwort.

Occurring in dry, sandy soil in a few counties of the State. It is an easily recognized form, and the citation is confirmed by numerous herbarium specimens.

Flowers from June until in August.

Vigo (Blatchley); Elkhart (Barnes); Lake and St. Joseph.

EUPHORBIACEÆ. Spurge Family.**PHYLLANTHUS L.****P. CAROLINENSIS Walt.**

Found sparingly in the southern part of the State growing on sandy or gravelly banks along roadsides.

Flowers from May until the heavy frosts.

Jefferson (Barnes); Gibson and Posey (Schneck); Vigo (Blatchley).

CROTON L.**C. GLANDULOSUS L.**

Specimens sent me by Mr. H. J. Clements, of Washington, Indiana, are to be referred to this species. The form grows in sandy soil in open places.

Flowering specimens were collected in April.

Daviess (Clements).

C. CAPITATUS Michx. Hogwort.

In the southern counties of the State in dry soils, but nowhere abundant.

Flowers from May until October.

Clark (Baird and Taylor); Floyd and Harrison.

C. MONANTHOGYNUS Michx.

This species is also confined to the southern part of the State and is of exceptional occurrence, though reported from several counties.

Flowers from June until in September.

Putnam (MacDougal); Clark (Baird and Taylor); Johnson (Barnes); Fayette (Hessler);

ACALYPHA L.**A. VIRGINICA L. Three-seeded Mercury.**

Common in various counties in thickets and woods, preferring sandy soils. More common in the southern counties.

Flowers from June through September.

Tippecanoe (Cunningham); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Daviess (Clements); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

A. GRACILENS Gray.

(*A. Virginica gracilens* Muell.)

In low or sandy waste places, usually in shaded localities. Not so abundant as the preceding, from which it is not always distinguished.

Flowers from June through September.

Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Hamilton (Wilson); Vigo (Blatchley).

EUPHORBIA.

E. POLYGONIFOLIA L. Sea-side or Knot-weed Spurge.

In sand soils about the southern shores of Lake Michigan. Not found far inland. One of our most characteristic littoral plants.

Flowers from July until September.

Lake (Hill); Porter (Cowles).

E. MACULATA L. Spotted Spurge.

Common throughout the State in dry soils. Frequent on sandy banks and along roadsides.

Flowers from June until the heaviest frosts.

Putnam (MacDougal); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

E. HUMISTRATA Engelm. Hairy Spreading Spurge.

Common in old fields and on banks in dry soils. Probably throughout the State.

Flowers from July until October.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Vigo (Blatchley).

E. NUTANS Lag. Large or Upright Spotted Spurge.

(*E. Preslii* Guss.)

Very widely distributed and abundant, perhaps our most common form. Usually in dry soils in fairly shaded situations.

Flowers from May until in October.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Gibson and Posey (Schneck); Clark (Baird and Taylor); Vermillion (Wright); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

E. COROLLATA L. Flowering Spurge.

In all parts of the State and very abundant. An attractive form used largely in decorations. It grows in dry situations at the edges of fields, along roads or upon railway embankments. It acts as a skin irritant in many cases.

Flowers from April until in October.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Gibson and Posey (Schneck); Clark (Baird and Taylor); Vermillion (Wright); Cedar Lake (Deam); Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

E. MARGINATA Pursh. White-margined Spurge. Showy Euphorbia.

Introduced into the southern part of the State and largely escaped from cultivation. In some regions the form has covered large areas, especially rapid in its spread on the rocky slopes of limestone hills. It has also invaded cultivated fields, especially those with a coarse, rocky soil, and has become an annoying weed.

Flowers from May until the late frosts.

Jefferson (Barnes); Franklin (Meyncke); Gibson and Posey (Schneck); Hamilton (Wilson).

E. DENTATA Michx. Toothed Spurge.

Abundant in many parts of the State. It is found most plentifully at the base of limestone cliffs and in rich, sandy soils. In either situation it is found in shaded locations.

Flowers from July until October.

Cass and Fayette (Hessler); Putnam (MacDougal); Vigo (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Marion and Montgomery.

E. IPECACUANHÆ L. Wild Ipecac.

In the southern part of the State in dry, sandy soil. Especially frequent in the region of the Knobs. Locally used as an emetic.

Flowers from May until October.

Marion, Floyd, Scott, and Harrison.

E. HETEROPHYLLA L. Various-leaved Spurge.

This species has entered our flora from the west and is sparingly found in a few western counties, growing on sandbanks or barren hillsides.

Flowers from April until the heaviest frosts.

Vigo (Blatchley); Tippecanoe (Golden).

E. OBTUSATA Pursh.

This species has entered the flora from the south. It is reported only from Gibson, though probably occurring in adjoining counties. Found in dry soil.

Flowers from March until August.

E. COMMUTATA Engelm. Tinted Spurge.

Quite abundant on shaded hillsides and along streams in rich, sand loams.

Flowers from March until August.

Tippecanoe (Cunningham); Jefferson and Clark (Barnes); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Fayette (Hessler); St. Joseph (Rothert).

E. ESULA L. Leafy Spurge.

From the southwestern part of the State largely, so far as reports show. In waste places in sandy soil.

Flowers from May until October.

Gibson and Posey (Schneck); Steuben (Bradner).

E. CYPARISSIAS L. Cypress Spurge.

Escaped from gardens in a few counties and growing well on dry banks.

Tippecanoe (Cunningham); Noble (Van Gorder); Laporte (Barnes); St. Joseph (Rothert); Vigo (Blatchley); Hamilton and Marion (Wilson).

CALLITRICHACEÆ. Water Starwort Family.**CALLITRICHE L.****C. AUSTINI Engelm. Terrestrial Water Starwort.**

Reported from but one county. In damp shaded places.

Flowers from July to September.

Gibson.

C. HETEROPHYLLA Pursh. Larger Water Starwort.

In ponds and slow streams.

Flowers from July to September.

Gibson.

LIMNANTHACEÆ. False Mermaid Family.**FLERKEA Willd.****F. PROSERPINACOIDES Willd. False Mermaid.**

Found chiefly in southern counties in rich, wet soils, usually along streams. It is, however, nowhere abundant.

It flowers with us late in April or early in May, depending upon its location.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Marion; Hamilton (Wilson); Porter (Hill); Tippecanoe.

ANACARDIACEÆ. Sumac Family.

RHUS L.

R. COPALLINA L. Dwarf or Black Sumac.

In dry soil, chiefly on hills and ridges. Most frequent in the southern part of the State. The form is not poisonous, but should be handled with care by persons with sensitive skins. "The leaves and bark contain much tannin, and are collected in large quantities in the southern states and ground for tanning leather." (Britton and Brown.)

Flowers in June and July.

Kosciusko (Coulter); White (Hussey); Franklin (Meyncke); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Monroe (Blatchley); Steuben (Bradner).

R. HIRTA (L.) Sudw. Staghorn Sumac.

(*R. typhina* L.)

In various parts of the State on hillsides or in sandy or gravelly soil. While frequent, it is not especially abundant in any of its stations. The bark is rich in tannin.

Flowers in June and July.

Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Kosciusko (Chipman); Lake; Steuben (Bradner).

R. GLABRA L. Scarlet Sumac.

Common in all parts of the State in sandy or gravelly soil, occupying waste places often to the exclusion of all other shrubs. The foliage sometimes used in tanning. Not poisonous, but in some cases known to have caused serious eruptions of the skin.

Flowers from June through August.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Putnam (MacDougal); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Gibson and Posey (Schneck); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

R. AROMATICA Ait. Sweet-scented Sumac.*(R. Canadensis Marsh.)*

Widely distributed and quite abundant in most parts of the State. It is found in thin, sandy soil or on limestone ledges and also in rocky woods.

Flowers in March and April.

Tippecanoe (Cunningham); Monroe and Crawford (Blatchley); Cass (Hessler); Jefferson (Barnes); Dearborn (Collins); Franklin (Meyncke); Clark (Baird and Taylor); Lake.

R. VERNIX L. Poison Elder. Poison Sumac.*(R. venenata DC.)*

This very poisonous form is very largely, if not entirely, confined to the swamp regions of the northern part of the State. It is as a rule quite abundant in the stations in which it occurs. Its favorite location seems to be in tamarack swamps.

Flowers in June and July.

Kosciusko (Coulter); Cass and Marshall (Hessler); Noble (Van Gorder); Hamilton (Wilson); Steuben (Bradner); Lake.

R. RADICANS L. Poison, Climbing or Three-leaved Ivy. Poison Oak.*(R. Toxicodendron L.)*

In all parts of the State in various situations, and of various habits. It is found as a bush from three to six feet high or as a vine climbing to the height of one hundred fifty feet or more. It usually is found in coarse, rocky or gravelly soils. Very poisonous to the touch. Its berries are not poisonous, and are largely eaten by birds.

Flowers from May until in July.

Kosciusko (Coulter); Elkhart (Barnes); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Putnam (MacDougal); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

ILICACEÆ. Holly Family.**ILEX L.****I. OPACA Ait. American Holly.**

In moist woods in sparing quantities in the southwestern counties. I have seen no Indiana specimens of the form, but it is admitted upon the authority of Mr. Robert Ridgway, whose monograph of the "Forest Flora of the Lower Wabash Valley" is one of the most valuable contributions to our knowledge of that portion of the State.

I. DECIDUA-Walt. Swamp or Meadow Holly.

Very abundant in the southwestern part of the State, often forming extensive thickets around some of the ponds and sloughs in the cypress swamp.

Flowers unfold with the leaves in May.

Gibson and Monroe; Knox (Ridgway).

I. VERTICILLATA (L.) A. Gray. Winter Berry. Fever Bush.

In marshes or low wet grounds throughout the State. Usually abundant in the stations in which it occurs.

Flowers in June and July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Cass (Hessler); Hamilton (Wilson); Steuben (Bradner); Gibson.

ILICIOIDES Dumont.**I. MUCRONATA (L.) Britton.**

(*Nemopanthes fascicularis*.)

In low, wet grounds and marshes, especially in the northern counties of the State. Most abundant in tamarack swamps.

Flowers in May and June.

Fulton (Hessler); Lake (Hill); Steuben (Bradner); Noble (Van Gorder); Putnam (MacDougal).

CELASTRACEÆ. Staff-tree Family.**EUONYMUS L.****E. AMERICANUS L. Strawberry Bush. Burning Bush.**

In low woods and along river banks, in rich or alluvial soil. Of somewhat limited distribution, and nowhere especially abundant.

Flowers in April and May.

Tippecanoe (Hussey); Jefferson (Barnes); Monroe (Dudley); Gibson and Posey (Schneck); Noble (Van Gorder).

E. OBOVATUS Nutt. Running Strawberry Bush.

(*E. Americanus obovatus* T. and G.)

Frequent in low, damp woods and thickets, and along rocky ledges. Widely distributed through the State.

Flowers from April through June.

Noble (Van Gorder); Franklin (Meyneke); Clark (Baird and Taylor); Putnam (MacDougal); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); St. Joseph (Rothert); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

E. ATROPURPUREUS Jacq. Burning Bush. Wahoo.

A handsome shrub or small tree, growing in rich alluvial soils, of wide distribution through the State. Largely cultivated as an ornamental shrub.

Flowers in May and June.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Gibson and Posey (Schneck); Dearborn (Collins); Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

CELASTRUS L.**C. SCANDENS L. Shrubby or Climbing Bittersweet. Staff-tree.**

A trailing or climbing woody vine found in all parts of the State, growing in rich soils, at the borders of woods and thickets. Especially handsome in autumn when the orange-yellow capsule bursts, exposing the showy red aril.

Flowering from May until August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Clark (Barnes); Jefferson (J. M. Coulter); Posey and Gibson (Schneck); Vigo and Monroe (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Daviess (Clements); Round Lake (Deam); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

STAPHYLEACEÆ.**STAPHYLEA L.****S. TRIFOLIA L. American Bladder-nut.**

A handsome, upright shrub usually growing in damp thickets or along streams. It is also found in many places in southern Indiana as a shrub of damp limestone cliffs, in which situation its habit is much modified.

It flowers in April and May, its drooping cluster of white flowers at the tips of the branches suggesting it as a suitable form for ornamentation.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Hendricks (Trucksess); Decatur (Ballard); Knox (Spillman); St. Joseph (Rothert); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

ACERACEÆ. Maple Family.**ACER L.****A. SACCHARINUM L. Silver Maple. Soft or White Maple.**

(*A. dasycarpum* Ehrh.)

Well distributed throughout the State along streams. A large tree ranging from eighty to one hundred twenty feet high and reaching a trunk diameter of from three to five feet. The wood is hard, but somewhat brittle, being of less value than that of the Sugar Maple. It is quite largely used in the manufacture of furniture. The species is largely used for shade trees in streets and parks.

Flowers from February until April in its various situations.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Knox (Spillman); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson).

A. RUBRUM L. Red Maple. Water or Swamp Maple.

A well-known form, common in low, wet soils throughout the State. The species reaches a size equalling that of the preceding form. The wood is hard but not strong. It is largely used in furniture making, for woodenware, gun-stocks, etc. The most brilliant of the maples in autumnal coloration.

Flowers in March and April.

A few reported stations are the following: Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

A. SACCHARUM Marsh. Sugar Maple. Sugar Tree.

(*A. saccharinum* Wang.)

Abundant over almost the entire State, reaching its highest development in rich upland soils. The tree is of great economic importance, an imperfect understanding of which has led to large waste. The tree occurs in fair abundance in all but two counties of the State. Apart from its value for sugar and syrup, the wood is of such varied use that the demand for it is leading to the destruction of many sugar orchards. It is largely used in the manufacture of furniture, shoe-last and pegs, saddle-trees, in turnery,

for interior finish and flooring; it is also largely employed in ship-building. "Curled Maple" and "Bird's-eye Maple" of cabinet-makers are varieties.

Flowers in February, March and April.

Its distribution is so general that specific reference to stations is omitted.

A. NIGRUM Michx. Black Sugar Maple.

(*A. saccharinum nigrum* T. and G.)

Sparingly distributed throughout the State along streams, and in low, rich lands in central and southern Indiana. Usually in lower ground than the preceding, and more closely confined to bottom lands. The wood is similar to that of the Sugar Maple, the sap also yielding much sugar.

Flowers in April and May.

Kosciusko (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Hamilton and Marion (Wilson); Gibson and Posey (Ridgway).

A. NEGUNDO L. Box Elder. Ash leaved Maple.

(*Negundo aceroides* Moench.)

Fairly distributed through the southern counties of the State on wet banks, becoming more rare northward, except in the prairie regions where it has been largely planted for a windbreak. The light wood is of no great value, although somewhat used in interior finish and for paper pulp. Locally largely used for sap troughs. Cultivated as an ornamental tree in all parts of the State.

Flowers as early as April and as late as July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Cass (Hessler); Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

HIPPOCASTANACEÆ. Buckeye Family.

ÆSCULUS L.

Æ. HIPPOCASTANUM L. Horse Chestnut.

A handsome tree cultivated for ornament which in a few cases seems to have escaped from cultivation. I know of three instances in which these escapes have successfully held their own for over ten years. While not common save under cultivation, the species has undoubtedly obtained a foothold in the State.

Æ. GLABRA Willd. Ohio Buckeye. Fetid Buckeye.

Commonly distributed throughout the State, in low, rich soil, except in the region of the lower Wabash, where it is reported as rare. It is a sign of rich soil, and has its mass distribution along streams in the bottom lands. Not used locally except for fuel, although a valuable timber in certain manufactures, notably that of artificial limbs, for which it is preferred to any other wood. It is also used somewhat largely in the manufacture of paper pulp.

Flowers in April and May. The poisonous effect of its fruit upon cattle is, perhaps, considerably exaggerated. The tree has a prospective value which makes desirable a conservation of the remaining forms.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jefferson (Barnes); Tippecanoe (Cunningham); Kosciusko (Coulter); Hendricks (Trucksess); Decatur and Shelby (Ballard); Jay, Delaware, Randolph, and Wayne (Phinney); Clinton and Boone (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

Æ. OCTANDRA Marsh. Yellow or Sweet Buckeye.

(*Æ. flava* Ait.)

Of very limited distribution. Reported only from Jefferson and a few adjoining counties, and in these localities as occurring in sparing numbers. Found in rich woods and along streams.

Flowers in April and May.

Wood of the same general character as the preceding, and adapted to the same uses.

SAPINDACEÆ. Soapberry Family.**CARDIOSPERMUM L.****C. HALICACABUM L. Balloon Vine.**

In waste places. Common in cultivation and occasionally escaping from gardens.

Flowers during summer.

BALSAMINACEÆ.

IMPATIENS L.

I. AUREA Muhl. Pale Touch-me-not.*(I pallida Nutt.)*

Characteristic of rich, moist soils in shaded localities.

The flowering season is short so far as the individual plant is concerned, but the form may be found in bloom in various localities through June, July, and August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Monroe (Blatchley); Putnam (MacDougal); Jefferson (Barnes); Shriner Lake (Deam); Decatur and Shelby (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

I. BIFLORA Walt. Spotted Touch-me-not.*(I. fulva Nutt.)*

Found in similar localities, but less frequent than the former. Both forms of the genus are probably found in every part of the State in greater or less abundance.

In addition to the localities cited for *I. aurea*, there are to be added: Knox (Spillman); Vermillion (Wright); Steuben (Bradner).

In addition to the distinction afforded by the flowers, the form may usually be separated from *aurea* by its smaller size and lighter green leaves.

RHAMNACEÆ. Buckthorn Family.

RHAMNUS L.

R. LANCEOLATA Pursh. Lance-leaved Buckthorn.

Sparingly distributed in the State, growing in moist soils and especially abundant on limestone outcrops.

Flowers in May and June.

Tippecanoe (Cunningham); Clark (Barnes); Cass (Hessler).

R. CAROLINIANA Walt. Carolina Buckthorn.

Discovered in the southern counties by Mr. W. S. Blatchley, growing on rocky hillsides. Abundant in the stations in which it occurs. The species entered the Indiana flora from the south.

Flowering season, May and June.

Crawford and Harrison (Blatchley).

CEANOTHUS L.

C. AMERICANUS L. New Jersey Tea.

Found abundantly in sandy soils, usually in open or light shaded places. Where it obtains a foothold it frequently spreads over wide areas to the practical exclusion of other shrubs. Common name derived from the fact that an infusion of the leaves was used as tea by the American troops during the Revolution.

Flowers from May until in August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Laporte (Barnes); White (Hussey); Vermillion (Wright); Daviess (Clements); Gibson and Posey (Schneck); Vigo (Blatchley); Steuben (Bradner).

C. OVATUS Desf. Smaller Red-root.

Found only in dry sand or gravel beaches, or open stretches, in the northern part of the State. It is probably of more general distribution than the citations indicate, being in many instances confused with the preceding species which it resembles.

Flowers from May until July.

Lake (Hill).

VITACEÆ. Grape Family.

VITIS L.

V. LABRUSCA L. Fox Grape. Plum Grape.

In thickets, usually in rather moist soils in several parts of the State. Its range is probably wider than the citations indicate, the difficulty of satisfactorily discriminating the various species of the genus leading to their scant collection. "The cultivated Isabella, Concord and Catawba grapes have been derived from this species" (Britton and Brown).

Flowers in May; fruit ripens in August and September.

Putnam (MacDougal); Gibson and Posey (Schneck); Cass (Hessler); Hamilton and Marion (Wilson); Jefferson.

V. AESTIVALIS Michx. Summer Grape. Small Grape.

Common throughout the State in thickets, frequenting rather dry soils. It is one of our most characteristic lianas. The fruit is acid but edible, and is somewhat largely used.

Flowers in April and May; fruit ripens in September and October.

Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Kosciusko (Coulter); Putnam (MacDougal); Steuben (Bradner).

V. VULPINA L. Sweet-scented Grape. Riverside Grape.(*V. riparia* Michx.)

In many counties of the State, rather strictly confined to banks of streams in rocky soils. More abundant in the southern counties.

Flowers in April and May; fruit ripens from July, continuing until in October.

Gibson and Posey (Schneck); Putnam (MacDougal); Vigo (Blatchley); Tippecanoe (Coulter); Hamilton and Marion (Wilson).

V. CORDIFOLIA Michx. Frost Grape. Chicken Grape.

Common throughout the State in moist thickets and along the banks of streams. It thrives best in rich bottom lands.

Flowers in April and May; fruit ripens after the heavier frosts.

Jefferson (J. M. Coulter); Putnam (MacDougal); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Daviess (Clements); Hamilton and Marion (Wilson); Steuben (Bradner).

V. RUPESTRIS Scheele. Sand Grape. Sugar Grape.

This southern form was first detected in sand soils in Lake County by Mr. Blatchley. Dr. Cowles had also collected the form, doubtfully referring it to *V. cordifolia*. Specimens were sent to Professor L. H. Bailey, of Cornell University, who referred the form as above. It occurs abundantly in various stations in the region indicated.

Flowering from April to June; fruit ripe in August.

Lake (Blatchley).

AMPELOPSIS Michx.**A. CORDATA Michx.**(*Cissus Ampelopsis* Pers.)

In the central and southern counties of the State in swamps and moist woods and thickets. Not common, but abundant in stations in which it occurs.

Flowers in May and June.

Putnam (MacDougal); Gibson and Posey (Schneck); Jefferson.

PARTHENOCISSUS Planch.

P. QUINQUEFOLIA (L.) Planch. Virginia Creeper. Wild Ivy.
(*Ampelopsis quinquefolia* Michx.)

Common in rich woods and fields in all parts of the State. Usually climbing, rarely trailing in our area. Locally it is known often as "Five-leaved Ivy" and Woodbine. Somewhat cultivated.

Flowers from April through June. The species is also very handsome in the autumn because of the deep red leaf coloration and the numerous panicles of blue-black fruit.

Kosciusko (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jefferson (Barnes); Clark (Baird and Taylor); Hamilton and Marion (Wilson); Steuben (Bradner).

TILIACEÆ. Linden Family.

TILIA L.

T. AMERICANA L. Bass-wood. White-wood. Lin.

This tree, indicative always of rich soil, is fairly well distributed throughout the State, reaching its greatest development in the valley of the lower Wabash. A specimen from this region gave the following measurements: Circumference three feet from the ground, $17\frac{1}{2}$ feet; height of trunk from roots to first branch, 50 feet; total height, 109 feet. The wood, while not strong, is very compact, close-grained and easily worked, and is used very largely in the manufacture of woodenware and other products not requiring great strength. It is also largely used in the manufacture of paper pulp. In some sections of the State it is used almost exclusively for making charcoal. In most instances, however, this valuable tree is only used for fuel.

Flowers in May and June; its fragrant flowers, rich in nectar, attracting countless bees and butterflies and other insects. Definite reports of its occurrence in fair abundance and of marketable size have been received from thirty-five counties, covering all parts of the State. So general is its distribution that it is unnecessary to give specific citations.

T. HETEROPHYLLA Vent. White Bass-wood. Bee-tree.

Very sparingly found in a few southern counties, growing in similar localities and associated with the preceding. Its wood is scarcely distinguishable from that of *T. Americana*, and is used for the same purposes.

Jefferson (J. M. Coulter); Gibson (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney).

The Gibson County citation is of a single tree near the mouth of White River. In Jefferson and Clark a number of the trees may be found at the reported stations.

Flowers in June and July.

MALVACEÆ. Mallow Family.

MALVA L.

M. SYLVESTRIS L. High Mallow.

In the southern part of the State, about dwellings and along roadsides. Escaped from cultivation and well established.

Flowers from June until October.

Monroe (Blatchley); Fayette (Hessler); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Clark; Steuben (Bradner).

M. ROTUNDIFOLIA L. Common Mallow. Cheeses.

Common everywhere, but annoying only in lawns. Most frequent about dwellings and along roadsides.

Flowering season from May until November.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Clark (Baird and Taylor); Dearborn (Collins); Vermillion (Wright); Putnam (MacDougal); Hendricks (Trucksess); Decatur and Shelby (Ballard); Monroe (Blatchley); Wabash (Jenkins); St. Joseph (Rothert); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

M. VERTICILLATA CRISPA L. Whorled Mallow.

(*M. crispa* L.)

Escaped from cultivation and established in central part of the State. Not abundant nor widely distributed.

Flowering specimens collected in June.

Putnam (Underwood).

M. MOSCHATA L. Musk Mallow.

In waste, rather sandy soils, in a few central and northern counties. Odor of musk quite distinct on warm, moist days.

Flowers in June and July.

Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Steuben (Bradner).

NAPÆA L.

N. DIOICA L. Glade Mallow.

In rich, moist soils, rather plentiful in its stations.
Flowering and fruiting specimens collected in August.
Tippecanoe (Cunningham); Carroll.

MALVASTRUM A. Gray.

M. ANGUSTUM Gray. Yellow False Mallow.

Along railways in the eastern counties of the State. Not common. Probably a migrant.
Flowering in July and August.
Jay, Delaware, Randolph, and Wayne (Phinney).

SIDA L.

S. SPINOSA L. Prickly Mallow. Thistle Mallow.

Abundant in fields and waste grounds, especially in the southern part of the State. Most frequent in sandy soil in open places.
Flowers from April until October.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Vermillion (Wright); Shelby (Ballard); Union (MacDougal); Hamilton and Marion (Wilson).

ABUTILON Gaertn.

A. ABUTILON (L.) Rusby. Velvet Leaf. Butter Print. Indian Mallow.

(A. Avicennæ Gaertn.)

Found abundantly in all parts of the State in waste grounds, often invading cultivated fields. It is regarded as a bad weed, because difficult of eradication. Prefers dry, rather sandy or coarse soils.

Flowers from July until the middle of October.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler); Wabash (Jenkins); Decatur (Ballard); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

HIBISCUS L.

H. MOSCHEUTOS L. Swamp Mallow.

Exceptionally found in marsh regions, but abundant in none of its stations.

Flowers in August and September.

Kosciusko (Chipman); Clark (Baird and Taylor); Knox (Spillman); Lake (Hill).

H. LASIOCARPUS Cav. Rose Mallow.

Common in wet prairies and the borders of prairie swamps in the southern counties, becoming rarer northward, and not reported as occurring north of Hamilton County.

Flowers from July until September.

Vigo (Blatchley); Daviess (Clements); Gibson and Posey (Schneck); Hamilton (Wilson).

H. MILITARIS Cav. Halberd-leaved Rose Mallow.

Found on banks of streams and in overflowed, sandy bottom lands. Quite plentiful in its stations, but not occurring in the northern part of the State.

Flowers from June through August.

Vigo, Daviess and Parke (Blatchley); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Knox (Ridgway).

H. TRIONUM L. Bladder Mallow.

In waste places in various counties of the State, probably escaped from cultivation.

Flowers from May through September.

Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Hamilton and Marion (Wilson); Steuben (Bradner); Monroe (Hessler).

HYPERICACEÆ. St. John's-wort Family.

ASCYRUM L.

A. HYPERICOIDES L. St. Andrew's Cross.

(*A. Crux-Andreæ* L.)

In dry, sandy soil in a few southern counties. Nowhere abundant.

Flowers from July through September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Monroe and Crawford (Blatchley).

HYPERICUM L.

H. ASCYRON L. Great St. John's-wort.

In a few counties along streams and in wet places. Probably of wider range than citations indicate.

Flowers in July and August.

Monroe and Putnam (Blatchley); Noble (Van Gorder).

H. KALMIANUM L.

In the northern part of the State in wet sandy or gravelly soils bordering swamps. Nowhere abundant, but not infrequent.

Flowering in August and September.

Lake (Hill); Laporte (Barnes); Wabash (Jenkins).

H. PROLIFICUM L. Shrubby St. John's-wort.

On the banks of streams and in moist, open places in many counties of the State. Quite abundant in its stations.

Flowers from June through August.

Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Kosciusko (Coulter); Cass (Hessler); Jefferson (J. M. Coulter); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyneke); Steuben (Bradner).

H. DENSIFLORUM Pursh. Bushy St. John's-wort.

Exceptionally found in a few counties, at the edges of woods in dry, sterile soils.

Flowers from August until October.

Tippecanoe (Cunningham); Vigo (Blatchley).

H. ADPRESSUM Bart. Creeping St. John's-wort.

Occasional in the southwestern counties in moist, low grounds.

Flowers in July and August.

Gibson and Posey (Schneck).

H. SPHAEROCARPUM Michx.

On wet limestone cliffs, or in wet, coarse soils in a few stations. Quite plentiful in the localities in which it occurs.

Flowers from July through September.

Putnam (MacDougal); Clark (Baird and Taylor); Cass (Hessler); Carroll.

H. PERFORATUM L. Common St. John's-wort.

Found abundantly throughout the State in old fields and meadows, and along roadsides. In some localities a troublesome weed. Crushed plant odorous.

Flowers from June until September.

St. Joseph (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyneke); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Steuben (Bradner).

H. MACULATUM Walt. Spotted or Corymbled St. John's-wort.
(*H. Corymbosum* Muhl.)

In moist soil.

Flowers from July to September.

Steuben (Bradner).

H. MUTILUM L. Dwarf St. John's wort.

Common throughout the State in low, usually moist grounds.

Flowers from June until September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton (Wilson).

H. MAJUS (Gray) Britton.

(*H. Canadense majus* Gray.)

In central and northern part of the State in low, wet grounds, especially abundant near lakes and marshes.

Flowers from June through September.

Laporte (Barnes); Putnam (MacDougal); Lake (Hill).

H. CANADENSE L.

In situations similar to the preceding, but in rather more sandy soil.

Flowers from July through September.

Pulaski (Noel); Clark (Baird and Taylor); Noble (Van Gorder); Putnam (MacDougal); Steuben (Bradner).

H. DRUMMONDII (Grev. and Hook.) T. and G.

Occasionally found in dry, hard soil in the southwestern counties of the State. Only reported by Dr. J. Schneck.

Flowering specimens collected in August.

Gibson and Posey (Schneck).

H. ELLIPTICUM Hook.

In Hamilton and Marion counties growing in wet places (G. W. Wilson).

SAROTHTA L.**S. GENTIANOIDES L. Pine-weed.**

(*Hypericum nudicaule* Walt.)

Reported only from the extreme southwestern counties of the State as occurring occasionally in sterile, sandy soil.

Flowering from June through September.

Gibson and Posey (Schneck); Lake (Hill).

TRIADENUM Raf.**T. VIRGINICUM L. Marsh St. John's-wort.**

(*Elodes campanulata* Pursh.)

Plentifully found in swamps and marshes in most parts of the State, being more abundant in the northern counties.

Flowers from July through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Laporte (Barnes); Noble (Van Gorder); Gibson and Posey (Schneck); Steuben (Bradner).

T. PETIOLATUM (Walt.) Britton.

(*Elodes petiolata* Pursh.)

Admitted upon a collection of Dr. Robert Hessler in Monroe County. Plant was collected in July in low, wet grounds. The only record for the State to my knowledge.

ELATINACEÆ. Water-wort Family.**ELATINE L.****E. AMERICANA (Pursh) Arn. Water-wort.**

Reported only from Gibson and Posey counties by Dr. Schneck. It occurs there in moist or marsh places in considerable abundance.

Flowering in May and June.

Steuben (Bradner).

CISTACEÆ. Rock-rose Family.

HELIANTHEMUM.

H. CANADENSE (L.) Michx. Frost-weed.

Occurring more abundantly in the northern part of the State, though extending into the southern counties. The flowering season extends from June in the southern counties, through August in the northern. Late in the fall, crystals of ice shoot out from the cracked bark near the root, a fact explaining the popular name.

Kosciusko (Coulter); Vigo (Blatchley); Cass (Hessler); Elkhart (Barnes); Noble (Van Gorder); St. Joseph (Rothert); Clark (Baird and Taylor).

HUDSONIA L.

H. TOMENTOSA Nutt.

A sand-loving plant confined to the shores of Lake Michigan and rarely extending far inland. Reported from Lake County by E. J. Hill, and as a member of the dune floras of Lake and Porter counties by Dr. H. C. Cowles.

LECHEA Pinweed.

L. MINOR L.

(*L. thymifolia* Michx.)

An insignificant perennial growing in dry, sterile ground.

• Lake (Hill); Cass (Hessler); Vigo (Blatchley); Steuben (Bradner).

It seems to be more abundant in the northern counties.

L. VILLOSA Ell.

(*L. major* Michx.)

Another form found in dry, sterile situations, with its more abundant local distribution in the southern portion of the State.

Lake (Hill); St. Joseph (Rothert); Cass (Hessler); Kosciusko (Coulter); Clark (Baird and Taylor); Dubois (Barnes); Steuben (Bradner).

L. MARITIMA Leggett. Beach Pin-weed.

(*L. minor maritima* Gray.)

In sandy pine-barrens. This has been reported from Lake County by Rev. E. J. Hill.

VIOLACEÆ. Violet Family.

VIOLA L.

V. PALMATA L. Blue Violet.

Found abundantly in most parts of the State, usually in dry, shaded places, but not infrequently in open meadows.

Flowering begins in April and May, and continues through the summer.

Jefferson (Barnes); Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Putnam (MacDougal); Daviess (Clements); Decatur and Shelby (Ballard); Kosciusko (Coulter); Hamilton and Marion (Wilson).

V. PEDATIFIDA Don.

In a few localities in the State in dry, open places, in sandy soils. Nowhere abundant.

Flowers from March until May.

Wayne (Phinney); Gibson and Posey (Schneck); Vigo (Blatchley).

V. OBLIQUA Hill. Common Blue Violet.

(*V. palmata cucullata*.)

In all parts of the State in moist, low grounds. The ordinary blue violet of the State. Occasional white flowers are found.

Flowering begins in March and continues through the summer.

Jefferson and Madison (Barnes); Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Kosciusko (Coulter); Daviess (Clements); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Decatur (Ballard); St. Joseph (Rothert); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

V. SAGITTATA Ait. Arrow-leaved Violet.

In the southern counties at the borders of moist prairies and exceptionally in dry, open woods. Not common in any of its stations.

Flowering in April and May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); Steuben (Bradner); Lake.

V. PEDATA L. · Bird's-foot Violet.

In rather dry, rich soils in woods or upon shaded slopes, in the northern counties of the State. Quite plentiful in many of its stations.

Flowering in May and June.

Kosciusko (Coulter); Cass (Hessler); Tippecanoe (Hussey); Dearborn (Collins); Noble (Van Gorder); Wayne (Phinney); St. Joseph (Rothert); Steuben (Bradner); Lake.

V. ROTUNDIFOLIA Michx. Round-leaved Violet.

In the southern counties, growing on rocky, limestone hillsides. Exceptionally found.

Flowering in April and May.

Dearborn (Collins); Jefferson (Young).

V. BLANDA Willd. Sweet White Violet.

In damp soils on shaded hillsides or low grounds, in many parts of the State. Not abundant in any of its stations.

Flowering in April and May.

Floyd (Clapp); Monroe and Vigo (Blatchley); Tippecanoe (Cunningham); Clark (Baird and Taylor); Noble (Van Gorder); Putnam (MacDougal); Decatur (Ballard); Jefferson (Barnes); Steuben (Bradner); Lake.

V. PRIMULÆFOLIA L.

Reported from the extreme southwestern counties, as occurring "rarely" in moist soils. I have seen no specimens. Admitted on authority of Dr. J. Schneck.

Flowering in April.

Gibson and Posey (Schneck).

V. LANCEOLATA L. Lance-leaved Violet.

Growing at the margins of ponds and in damp, open places in many counties: The flowers are very slightly fragrant.

Flowering from April until June.

Vigo (Blatchley); Tippecanoe (Cunningham); Elkhart and Jefferson (Barnes); Clark (Baird and Taylor); Dearborn (Collins).

V. HASTATA Michx. Halberd-leaved Yellow Violet.

This species is reported from the hill regions of southern Indiana. It probably exceptionally occurs in a few stations.

Flowers in April and May.

Clark (Baird and Taylor).

V. PUBESCENS Ait. Hairy Yellow Violet.

Very abundant throughout the State, most abundant in dry, rich woods. The species is one of the first of the genus to bloom.

Flowers from April until July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Daviess (Clements); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Decatur (Ballard); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

V. SCABRIUSCULA (T. and G.) Schwein. Smoothish Yellow Violet.

(*V. pubescens scabriuscula* T. and G.)

In woods and thickets, preferring moist situations.

Flowers from April to May.

V. CANADENSIS L.

In many counties usually growing on shaded hillsides or in upland woods. Quite frequent in the stations in which it occurs.

Flowers in May and June.

Jefferson (Barnes); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Decatur (Ballard); Steuben (Bradner).

V. STRIATA Ait. Pale or Striped Violet.

Very abundant throughout the State in moist shades and opens, apparently preferring soils with a considerable admixture of sand.

Flowers in April and May.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Fayette (Hessler); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); St. Joseph (Rothert); Knox (Spillman); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Porter.

V. LABRADORICA Schrank. American Dog Violet.

(*V. canina Muhlenbergii* Gray.)

In a few of the southern counties in deep, shaded ravines in moist soil. Not reported as occurring north of Monroe County.

Flowers in March and April.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Monroe (Dudley); Lake.

V. ROSTRATA Pursh. Long-spurred Violet.

Reported from four counties. The southern station is the "Clifty Ravine," in Jefferson County, a locality noted for the number of exceptional forms it contains. Not abundant in either of its stations.

Flowering in June and July.

Jefferson (Barnes); Noble (Van Gorder); Steuben (Bradner); Laporte.

V. TRICOLOR L. Pansy.

Found in waste places in some of the southern counties as an escape from cultivation. As an escape it rapidly loses in size and number of flowers, and also in variety of colors. After a few years, it blooms but sparingly and the flowers are very small.

Flowering season from April until June.

Knox (Spillman); Shelby (Ballard); Jefferson.

V. TENELLA Muhl. Field Pansy.

Not uncommon in the southern counties in woods and fields, growing in rich soils and with almost as great frequency on sandy banks.

Flowers from March until August.

Jefferson and Madison (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Vigo (Blatchley); Tippecanoe.

CUBELIUM Raf.**C. CONCOLOR (Forst.) Raf. Green Violet.**

(*Solea concolor* Ging.)

In moist, shaded places, usually in rocky or coarse soil. Also found in alluvial soils. Plentiful in the stations in which it occurs.

Flowering season from May until July.

Jefferson (Barnes); Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Putnam (MacDougal); Cass and Fayette (Hessler); Clark (Baird and Taylor); Franklin (Meyncke); Wayne (Phinney); Hamilton (Wilson).

PASSIFLORACEÆ. Passion Flower Family.

PASSIFLORA L.

P. LUTEA L. Yellow Passion Flower.

Found only in a few localities in the southern counties. Mr. Blatchley reports it from four stations in Monroe County, and Dr. Hessler as rare in Fayette County. I have found it on a single hillside in Jefferson County, trailing over limestone rocks. In Monroe County it is found on hillsides and in thickets. In our area it is a lime soil plant.

It blooms somewhat sparingly during June, July and the earlier part of August, and is one of the most delicate and graceful members of our flora.

Gibson.

CACTACEÆ. Cactus Family.

OPUNTIA Mill.

O. HUMIFUSA Raf. Western Prickly Pear.

(*O. Rafinesquii* Engelm.)

This is the only member of the Cactus family within our bounds. It is found in great abundance in the northwestern corner of the State in dry sand. In July and August its large yellow flowers (two to four inches broad), and prostrate, deep green stem, make it a marked feature. The Pennsylvania Railway is skirted for miles with this unique form. In 1885 it was found at Lafayette Junction, in Tippecanoe County, by Dr. Barnes, but failed to maintain itself. It was also reported from near Attica, Warren County, but a visit to the locality showed that if it had been present it had not maintained itself beyond a single season. It seems to be spreading somewhat along the line of several railways entering Chicago, but will probably not extend permanently beyond the sand covered region.

THYMELEACEÆ.

DIRCA L.

D. PALUSTRIS L. Leather-wood. Moose-wood.

A well known shrub, flowering in April and May. While found in many parts of the State it is nowhere abundant, and is in some places rapidly disappearing. The cause of its failure to maintain itself has not yet been made out. The plant is poisonous, the poison being very abundant in the bark. Applied to the skin, the

bark produces blisters and ulceration; taken internally violent vomiting results.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Putnam (MacDougal); Hamilton (Wilson); Decatur (Ballard); Steuben (Bradner).

ELAEAGNACEÆ. Oleaster Family.

LEPARGYRÆA Raf.

L. CANADENSIS (L.) Greene. Canadian Buffalo-berry.
(*Shepherdia Canadensis* Nutt.)

This northern shrub has found its only station in Indiana in Lake County, from which it was reported by E. J. Hill. In our region it is in flower in May, the fruit becoming ripe in August. It is easily recognized by the dense, silvery stellate hairs upon the under surface of the leaf.

LYTHRACEÆ. Loosestrife Family.

AMMANNIA L.

A. COCCINEA Rottb. Long-leaved Ammania.

A swamp plant confined to the southern counties of the State. It flowers from July to September.

Vigo and Monroe (Blatchley); Gibson and Posey (Schneck).

ROOTALA L.

R. RAMOSIOR (L.) Koehne.

Found only in swamps or very wet lands in southern part of the State. Flowers July to September.

Jefferson (J. F. Baird); Vigo (Blatchley); Clark.

DECODON Gmel.

D. VERTICILLATUS (L.) Ell. Swamp Loosestrife.

Of fairly general distribution, being much more abundant in the northern part of the State. Found in swamps or pools of back-water from lakes or streams.

Flowers July to September.

Kosciusko (Coulter); Vigo and Monroe (Blatchley); Cass (Hessler); Gibson and Posey (Schneck); Noble (Van Gorder); Marshall (Blatchley); Round Lake (Deam); Hamilton (Wilson); Steuben (Bradner); Laporte.

LYTHRUM L.

L. ALATUM Pursh. Loosestrife.

Characteristic of low grounds, and usually very abundant when found at all. In the rich low grounds about the margin of smaller lakes, or on the banks of ditches it is often a dominant form.

Flowering season begins in June and continues through August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Cass (Hessler); White (Hussey); Franklin (Meyncke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Vermillion (Wright); Lake (Hill); Hamilton (Wilson); Steuben (Bradner).

PARSONSIA P. Br.

P. PETIOLATA (L.) Rusby. Tar-weed. Clammy Cuphea.

(*Cuphea viscosissima* Jacq.)

Found in dry soil in various parts of the State, but nowhere abundant. In our area it flowers most abundantly in June, although the flowering season continues until September. One of the favorite locations is upon railroad embankments.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Monroe (Blatchley); Fayette (Hessler).

MELASTOMACEÆ. Meadow Beauty Family.

RHEXIA L.

R VIRGINICA L. Meadow-beauty. Deergrass.

In sandy, wet soil in various parts of the State.

Its flowering period is July and August. Its bright purple flowers make it a conspicuous object in the rather barren localities in which it is usually found.

Reported from Kosciusko (Coulter); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Marshall (Hessler).

ONAGRACEÆ. Evening Primrose Family.

ISNARDIA L.

I. PALUSTRIS L. Water Purslane.

(*Ludwigia palustris* Ell.)

Of frequent occurrence throughout the State, being found in ditches and stagnant pools.

It flowers early in July and continues in bloom until September.

Jefferson (J. M. Coulter); Vigo and Monroe (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Jay, Delaware, Wayne, and Randolph (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Fayette (Hessler); Marion and Hamilton (Wilson); Steuben (Bradner).

LUDWIGIA. False Loosestrife.

L. POLYCARPA Short and Peter.

Of sparing occurrence in wet, rich soil.

Reported stations are: Jay, Delaware, Randolph, and Wayne (Phinney); Gibson (Schneck); Steuben (Bradner).

L. ALTERNIFOLIA L.

A common and very variable form, especially abundant in the low lands about inland lakes.

When in flower in July and August it is frequently the most notable form in such localities.

Herbarium specimens from Jefferson (J. M. Coulter); Monroe (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Kosciusko (Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Steuben (Bradner).

JUSSIEA L.

J. DECURRENS (Walt.) DC.

This southern marsh form has a single reported station. The plant was collected by Dr. A. Clapp, of New Albany, in 1839, and is verified by specimens in the Clapp herbarium. From its mass distribution its most natural appearance in our bounds would be in Gibson and Posey counties instead of Floyd. The record of the occurrence of the species in Indiana in the past is unmistakable. It is doubtful, however, whether it occurs as a present member of our flora. Quite a number of forms found in the Clapp collections seem to have disappeared from our flora, a fact which emphasizes the importance of continued studies of definite areas, in order to determine in some measure plant movements now in progress.

CHAMÆNERION.

C. ANGUSTIFOLIUM (L.) Scop. Great Willow Herb. Fire-weed. Fire-pink.

(*Epilobium angustifolium* L.)

This striking form is so far as reported confined to low grounds in the northern parts of the State. It is apt to occur where tracts have been burnt over, or in fresh clearings. Its appearance in burnt areas has given it the name of fire-weed. It is cultivated somewhat largely in parks, especially where "mass effects" are desired.

Fulton (Hessler); Noble (Van Gorder); Tippecanoe (Hussey); Laporte (Barnes); Steuben (Bradner).

The Tippecanoe County reference is verified by abundant herbarium material. It has however not been reported in the past twelve years, although several complete studies have been made of the flora of the county during that period.

EPILOBIUM L.

E. LINEARE Muhl.

(*E. palustre lineare* Gray.)

A low ground form, usually in marshes, occurring sparingly in various counties.

Tippecanoe (Hussey); Noble (Van Gorder); Jefferson (Coulter); Gibson (Schneck); Monroe; Laporte; Lake (Hill); Hamilton and Marion (Wilson).

E. STRICTUM Muhl.

Reported from Noble County by W. B. Van Gorder and Dr. Barnes. The citation is verified by herbarium specimens.

Steuben (Bradner); Floyd (Clapp).

E. COLORATUM Muhl.

Of general distribution and quite abundant in low, marshy soils.

Tippecanoe (Cunningham); Kosciusko (Coulter); Laporte (Barnes); Putnam (MacDougal); Vigo (Blatchley); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Franklin (Meyneke); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Marion (Blatchley); Fayette (Hessler); Steuben (Bradner).

The species commences to bloom in July, and in favoring situations continues in flower until October.

E. ADENOCAULON Haussk.

A plant collected by Mr. W. W. Chipman in Kosciusko County is without question to be referred to this species. This is, however, the only recorded station for the State. It is probably not uncommon in wet places in our northern counties, having escaped detection because of the difficult discrimination of the species of this genus.

ONAGRA Adans.**O. BIENNIS (L.) Scop. Common Evening Primrose.**

(*Oenothera biennis* L.)

Abundant throughout the State and very variable. Its favorite locality seems to be in dry soil regions with fair exposure to the sun. It also occurs in fair development in moist regions with but slight apparent adaptations. In wet soils the flowering season seems slightly shorter, and the foliage leaves more deeply green.

The species begins to flower in June and continues through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Monroe (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Dearborn (Collins); Noble (Van Gorder); Fayette (Hessler); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

OENOTHERA L. Evening Primrose.**Œ. LACINIATA Hill.**

(*Œ. sinuata* L.)

A variable form chiefly decumbent in our area. It is reported from Vigo (Blatchley); Daviess (Clements); Fayette, a railroad migrant (Hessler).

Œ. RHOMBIPETALA Nutt.

This form is reported from various counties, chiefly southern. In all the localities found it is reported as "scarce" or rare. While its mass distribution is southern, it is found as far north as Lake.

Flowers June and July.

Hamilton (Wilson); Lake.

ANOGRA Spach.

A. ALBICAULIS (Pursh) Britton. Prairie Evening Primrose.

(Enothera albicaulis Nutt.)

An exceptional form of occasional occurrence in the southern counties. Its northern limit in the State seems to be in Hamilton County (Wilson), where it occurs along the L. E. & W. Railway.

KNEIFFIA.

K. PUMILA (L.) Spach.

(Enothera pumila L.)

In dry situations in the northern part of the State.

Herbarium specimens from Laporte (Barnes), and Noble (Van Gorder).

K. FRUTICOSA (L.) Raimann. Sundrops.

(Enothera fruticosa L.)

As a rule found only in low, rich soils, although occasionally found in dry localities. The species is very variable, and is frequently incorrectly referred.

It flowers most profusely in May and June, although occasional flowers may be seen late in August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jasper (Barnes); Monroe (Blatchley); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Cass (Hessler).

LAVAUXIA Spach.

L. TRILOBA WATSONII Britton. Three-lobed Primrose.

(Enothera triloba parviflora S. Wats.)

This western form is reported from Monroe County by W. S. Blatchley, as "frequent along streams and in gravelly soil."

The flowers were collected in July.

It is possible that this reference should be to *L. triloba* (Nutt.) Spach., a form naturally in our territory in such soils, and withal extremely variable.

GAURA L.

G. COCCINEA Pursh. Scarlet Gaura.

In dry soil, flowering in July and August. Reported only from Fayette County by Robert Hessler. The form is so decidedly western in its range that its occurrence in a single locality in the State must be looked upon as due to some exceptional means of distribution. (A railroad migrant. R. H.)

G. BIENNIS L.

A common form, usually found in dry soil, but in certain parts of its range in the State very abundant in low, wet lands, associated with Fringed Loosestrife (*Steironema ciliatum*).

Flowers from July to September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jasper (Barnes); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Vermillion (Wright); Hamilton and Marion (Wilson); Fayette (Hessler).

G. MICHAUXII Spach.

(*G. filipes* Spach.)

In dry, open places, apparently confined to the eastern counties of the State.

Flowers in July and August.

Reported from Jay, Delaware, Randolph, and Wayne (Phinney); Hamilton and Marion.

CIRCEA L.**C. LUTETIANA L. Enchanter's Nightshade.**

General throughout the State, occurring most abundantly in densely shaded woods.

It flowers from the early part of June through August.

Tippecanoe (Cunningham); Monroe (Blatchley); Fayette (Hessler); Kosciusko (Coulter); Clark (Baird and Taylor); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ALPINA L. Smaller Enchanter's Nightshade.

Not uncommon in wet woodlands. Not so abundant as the former, though found in all parts of the State.

Flowers from July to September.

Tippecanoe (Cunningham); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Noble (Van Gorder); Kosciusko (Chipman); Jay, Delaware, Randolph, and Wayne (Phinney); Steuben (Bradner); Carroll.

Probably very often not distinguished from *C. Lutetiana*.

HALORAGIDACEÆ. Water Millfoil Family.

HIPPURIS L.

H. VULGARIS L. Mare's Tail. Joint-weed.

This form, somewhat northern in its general distribution, is reported from two Indiana localities. The cypress swamps of Gibson and Posey counties, reported by Dr. J. Schneck, and from Kosciusko County, by Stanley Coulter. Concerning the latter reference there can be no doubt, as a careful study of the material shows. Dr. Schneck preserved no specimens, but his well known accuracy and the close connection he held with botanical centers leads to a ready acceptance of his citation. These localities extend the southern limits of the species very decidedly, the present limit being "the northern shore of Lake Superior."

Laporte; Lake.

PROSERPINACA L.

P. PALUSTRIS L. Mermaid-weed.

Reported only from Jefferson (J. M. Coulter); Noble (Van Gorder); Gibson and Posey (Schneck); Kosciusko (Coulter).

It should be looked for in July and will probably be found of quite general distribution in the swamp regions of the northern counties.

MYRIOPHYLLUM L.

M. SPICATUM L. Spiked Water Millfoil.

Confined to the northern counties. Reported only from Laporte (Barnes); Noble (Van Gorder), and Steuben (Bradner).

M. VERTICILLATUM L. Whorled Water Millfoil.

This form was added to State flora by W. S. Blatchley, who reports it from Vigo County.

Steuben (Bradner).

M. HUMILE (Raf.) Morong. Low Water Millfoil.

(*M. ambiguum* Nutt.)

Perhaps the most variable form of the genus, at least within our bounds.

Reported from Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

M. HETEROPHYLLUM Michx. Various-leaved Water Millfoil.

This form is in condition for collecting in our area in August.

Its reported stations are: Kosciusko (Chipman); Gibson (Schneck); Round Lake (Deam); Steuben (Bradner).

M. PINNATUM (Walt.) B. S. P. Pinnate Water Millfoil.

(*M. scabratum* Michx.)

Reported from Jay, Delaware, Randolph, and Wayne counties by Dr. A. J. Phinney. While Dr. Phinney preserved no specimens, all critical forms were referred to Prof. John M. Coulter. This judgment, added to that of Dr. Phinney, has led to the including of this form in the list of the State flora in the absence of a verifying specimen.

ARALIACEÆ. Ginseng Family.

ARALIA Tourn. Ginseng. Wild Sarsaparilla.

A. SPINOSA L. Angelica Tree. Hercules Club.

Confined to the counties bordering the Ohio River, except as cultivated for ornament. It thrives in lawns as far north as Tippecanoe County, maintaining itself through the severest winters without protection. Its very large, decomposed leaves make it a striking ornamental shrub.

Flowering season, July and August.

The only herbarium specimens are from Jefferson County, though the form has a much wider range in the region indicated.

A. RACEMOSA L. Spikenard.

A widely branching herb, found in rich woodlands in many regions of the State. It is nowhere abundant, but is comparatively of more frequent occurrence in the northern part of the State.

It flowers in July and its large, spicy, aromatic roots furnish a ready means of recognition.

The stations reported are: Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette and Cass (Hessler); Tippecanoe (Cunningham); Putnam (MacDougal); Kosciusko (Coulter); Hamilton (Wilson); Steuben (Bradner); Gibson and Lake.

A. NUDICAULIS L. Wild or Virginian Sarsaparilla.

Occurs in moist woodlands.

Flowers from May to June.

Steuben (Bradner); Gibson. Occurs on dry hillsides, "Shades of Death," Montgomery County. (W. S. B.)

A. HISPIDA Vent. Bristly Sarsaparilla.

In rocky or sandy woods.

Flowers from June to July.

Lake (Hill).

PANAX L.**P. QUINQUEFOLIUM L. Ginseng. "Sang."**

(*Aralia quinquefolia* Descne. and Planch.)

Found only in the southern half of the State and rapidly disappearing because of its commercial value. It is found usually in rich woods, apparently preferring warm, hillside exposures. It is still abundant in Brown County upon the authority of W. S. Blatchley and is reported as not rare in Fayette County by Dr. Hessler. Its quantity, however, has been so greatly reduced that the "sang" gatherers have disappeared.

Jefferson (J. M. Coulter); Monroe and Brown (Blatchley); Fayette (Hessler); Putnam (MacDougal); Hamilton (Wilson); Steuben (Bradner).

P. TRIFOLIUM L. Dwarf Ginseng. Ground-nut.

(*Aralia trifolia* Descne. and Planch.)

This form was first reported from Decatur County by the late Supt. W. P. Shannon.

The species flowers in our range in May and is found only in rich soil.

It is probably of somewhat more extended distribution in the State, as its general range includes Indiana.

Steuben (Bradner).

UMBELLIFERÆ. Carrot Family.**DAUCUS L.****D. CAROTA L. Wild Carrot.**

Abundant in all parts of the State, being in some localities an extremely annoying weed. It is found along roadsides, in waste places and in cultivated fields.

Flowers from June through September.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Franklin (Meyncke); Posey and Gibson (Schneck); Noble (Van Gorder); Tippecanoe (Cunningham); Putnam (MacDougal); Hendricks (Trucksess); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

ANGELICA L.

A. ATROPURPUREA L. Purple-stemmed Angelica.

Confined to the central and northern counties of the State, where it grows somewhat abundantly in swamps and wet grounds.

Flowers in June and July.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Steuben (Bradner); Porter and Lake.

CONIOSELINUM Hoffm.

C. CHINENSE (L.) B. S. P. Hemlock Parsley.
(*C. Canadense* T. and G.)

In the swamps and marshes of the central and northern counties, in considerable abundance.

Flowers in August and September.

Montgomery (Rose); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder).

OXYPOLIS Raf.

O. RIGIDUS (L.) Britton. Cowbane.
(*Tiedmannia rigida* Coult. and Rose.)

Rather widely distributed throughout the State in very wet grounds and at the borders of swamps. An extremely variable form.

Flowers from July until September.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Clark (Baird and Taylor); Vigo (Blatchley); Hamilton and Marion (Wilson).

HERACLEUM L.

H. LANATUM Michx. Cow Parsnip.

In low, wet soils and about lakes in the overflowed bottom lands. Common in the northern counties, becoming less frequent southward.

Flowering season, June and July.

Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Kosciusko (Chipman); Marion; Hamilton (Wilson); Steuben (Bradner).

PASTINACA L.

P. SATIVA L. Wild Parsnip.

Found throughout the State in various situations, usually in waste fields, by roadways or in cultivated grounds. It thrives most vigorously in moist soils. A common weed in nearly all parts of the State. Many cases of serious poisoning are reported as caused by this plant, the root being occasionally eaten by mistake or through ignorance.

Flowers from June through September.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Putnam (MacDougal); Vermillion (Wright); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

POLYTÆNIA DC.

P. NUTTALLII DC.

In dry soil in the "Knob" region of southern Indiana. Reported from several counties, but verified in only one case.

Flowering specimens collected in April.

Floyd (Clapp).

THASPIUM Nutt.

T. TRIFOLIATUM (L.) Britton. Purple Meadow Parsnip.

(*T. aureum atropurpureum* Coult. and Rose.)

Found in many parts of the State, in rich soils in rather open places. It is most frequent in dry situations, although sometimes extending into moist grounds. Probably found in as many localities as the next form, though not so generally reported.

Flowers in June and July.

Vigo (Blatchley); Jefferson (J. M. Coulter); Kosciusko (Coulter); Hamilton and Marion (Wilson); Gibson and Monroe.

T. TRIFOLIATUM AUREUM (Nutt.) Britton.

(*T. aureum* Nutt.)

Widely distributed throughout the State and quite abundant. Usually in rich, moist soils along streams or in damp ravines. Also very common in swamp regions.

Flowers from May through July.

Tippecanoe (Cunningham); Vigo and Monroe (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne

(Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jennings and Bartholomew (Barnes); Putnam and Union (MacDougal); Marion; Hamilton (Wilson); Lake (Hill).

T. BARBINODE (Michx.) Nutt. Hairy-jointed Meadow Parsnip.

In rich or sandy soils in very many counties of the State, usually found along streams.

Flowering in May and June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Kosciusko (Coulter); Tippecanoe (Cunningham).

LIGUSTICUM.

L. CANADENSE (L.) Britton.

(*L. actæifolium* Michx.)

Exceptional in our area. Found in the central counties in rich soil in shaded places.

Flowering specimens collected in July.

Hamilton (Wilson); Marion.

ERYNGIUM L.

E. AQUATICUM L. Rattlesnake-master. Button Snakeroot.

(*E. yuccæfolium* Michx.)

In many counties of the State in considerable abundance. It is frequent in rich, wet soils about lakes, on the borders of prairies and in the "barrens" of the Knobs in Harrison County.

Flowers from July until September.

Tippecanoe (Cunningham); Cass (Hessler); Laporte and Harrison (Barnes); Lake and Vigo (Blatchley); Gibson and Posey (Schneck); Kosciusko (Coulter); Floyd and Washington; Steuben (Bradner).

SANICULA L.

S. MARYLANDICA L. Black Snakeroot.

Widely distributed throughout the State, growing in abundance in rich, rather damp soils in shaded places.

Flowering from May through August.

Jefferson (J. M. Coulter); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Fayette (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Hamilton (Wilson); Knox (Spillman); Steuben (Bradner).

S. CANADENSIS L.*(S. Marylandica Canadensis Torr.)*

Not so abundant as the preceding, and found in somewhat drier soils. The two species intergrade closely in our area, so that they are separated with difficulty.

Flowers from June through August.

Putnam (MacDougal); Hamilton and Marion (Wilson); Cass (Hessler); Vigo (Blatchley); Jefferson and Lake.

PIMPINELLA L.**P. INTEGERRIMA (L.) Gray. Yellow Pimpernel.**

In several counties of the State, growing in sandy or rocky soils. Not reported from the extreme northern counties.

Flowering in May and June.

Tippecanoe (Cunningham); Jefferson (Barnes); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Monroe (Dudley).

EULOPHUS Nutt.**E. AMERICANUS Nutt.**

Found sparingly in our southwestern counties in dry soil on the borders of prairies.

Flowers from July until October.

Vigo (Blatchley); Gibson and Posey (Schneck).

CHÆROPHYLLUM L.**C. PROCUMBENS (L.) Crantz. Spreading Chervil.**

Abundant in moist, rich soils in rather open places. Also found in sandy soils.

Flowers in April and May.

Jefferson and Kosciusko (Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Tippecanoe (Golden); Hamilton (Wilson); Fayette (Hessler).

WASHINGTONIA Raf.**W. CLAYTONI (Michx.) Britton. Woolly Sweet Cicely.***(Osmorrhiza brevistylis DC.)*

In damp woods and thickets in many parts of the State. Usually frequent in the stations in which it occurs.

Flowers in May and June.

Jefferson (J. M. Coulter); Vigo and Monroe (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Golden); Kosciusko (Coulter); Steuben (Bradner).

W. LONGISTYLIS (Torr.) Britton. Smooth Sweet Cicely.

(*Osmorrhiza longistylis* DC.)

In thickets and rich woods throughout the State. Of as wide distribution as the preceding, but not as abundant in its stations.

Flowering in May and June.

Vigo and Monroe (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Kosciusko (Chipman); Hamilton (Wilson); Steuben (Bradner); Tippecanoe.

CONIUM L.

C. MACULATUM L. Poison Hemlock.

Chiefly found in the southern counties in waste places; but nowhere very abundant.

Flowering season, from May until July.

Gibson and Posey (Schneck); Dearborn (Collins); Franklin (Meyncke); Fayette (Hessler).

SIUM L.

S. CICUTÆFOLIUM Gmel. Hemlock Water Parsnip.

Well distributed throughout the State, occurring in wet soils along ditches and borders of ponds; also in swamps and marshes. An extremely variable species.

Flowering in July and August.

Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Laporte (Barnes); Noble (Van Gorder); Lake (Hill); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

ZIZIA Koch.

Z. AUREA (L.) Koch. Early Meadow Parsnip.

Specimens sent me by Mr. H. J. Clements are referred to this species. The plant grew in low, wet grounds and was quite plentiful.

Flowering season, from April until June.

Daviess (Clements); Steuben (Bradner); Lake (Hill).

Z. CORDATA (Walt.) DC. Heart-leaved Alexanders.

Occurs in woods.

Flowers in May and June.

Steuben (Bradner).

CARUM L.**C. CARUI L. Caraway. Carvies.**

Occurs occasionally in waste places.

Flowers from May until July.

Steuben (Bradner).

CICUTA L.**C. MACULATA L. Water Hemlock. Spotted Cowbane.**

Distributed throughout the State and occurring plentifully in swamps and ditches and in low wet grounds. The fleshy roots are aromatic; they perhaps furnish the most virulent plant poison in our bounds.

Flowering season, from June until August.

Jefferson (J. M. Coulter); Elkhart (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Round Lake (Deam); Steuben (Bradner).

C. BULBIFERA L. Bulb-bearing Water Hemlock.

In swamps in the northern part of the State. Neither so widely distributed nor so abundant in its stations as the preceding.

Flowers from July until September.

St. Joseph (J. M. Coulter); Noble (Van Gorder); Cass (Hessler); Round Lake (Deam); Steuben (Bradner); Laporte and Lake.

DERINGA Adans.**D. CANADENSIS (L.) Kuntze. Honewort.**

(*Cryptotaenia Canadensis* DC.)

Throughout the State in rich soils of woods and thickets. Quite plentiful wherever found.

Flowering season, June and July.

Tippecanoe (Cunningham); Carroll (J. M. Coulter); Monroe and Vigo (Blatchley); Posey and Gibson (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyneke); Vermillion (Wright); Fayette (Hessler); Steuben (Bradner).

HYDROCOTYLE L.

H. UMBELLATA L. Marsh Pennywort.

In the northern counties, sparingly found in marshes and other low grounds. Stations numerous, but the plant never abundant.

Flowering season, from June until September.

Noble and Laporte (Barnes); Kosciusko (Coulter); Steuben Bradner); Fulton (Blatchley).

H. AMERICANA L.

I have not seen this species, but it is admitted to the flora upon the authority of Dr. John M. Coulter.

Flowering specimens collected July 15.

Jefferson (J. M. Coulter).

ERIGENIA Nutt.

E. BULBOSA (Michx.) Nutt. Harbinger of Spring. Pepper and Salt. Ground-nut.

Found throughout the State, occurring in damp, rich soil, usually in open woods. Frequently found but nowhere abundant.

Flowering begins in favorable seasons in February, continuing through April.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Hussey); Kosciusko (Coulter); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

CORNACEÆ. Dogwood Family.

CORNUS L. Dogwood. Cornel.

C. CANADENSIS L. Low or Dwarf Cornel. Bunch-berry.

I have never seen an Indiana specimen of this plant, but it doubtless occurs, at least in the northern tier of counties. A reference of this form to Marion County, no collector's name being given, is doubtless an error. The range of the plant is toward the north, and our northern counties represent pretty fairly the southern limit of the form. The range as given in Britton and Brown (Vol. 2, p. 542) specifically includes Indiana, an inclusion probably based upon the work of E. J. Hill.

C. FLORIDA L. Flowering Dogwood.

Distributed throughout the State, but more abundant and of larger size in the southern half.

Flowers in May and June, according to portion of State in which it is found and exposure.

The wood is very hard and susceptible of a high polish. It varies in color from brown to greenish and reddish tints. While difficult to season, it is used somewhat extensively in turnery, for wood engravings, the bearings of machinery, hubs of wheels, etc. It is reported from almost every county of the State. The species should be preserved where not interfering with agricultural areas, not only on account of its potential value when other more easily-worked timbers are exhausted, but also because its fruit furnishes food for many forms of helpful birds.

C. CIRCINATA L'Her. Round-leaved Dogwood.

This shrub-like dogwood is from eight to ten feet high and is found in rich or sandy soil, in our bounds reaching its highest development in numbers in the latter. It is probably sparsely scattered throughout the State in favorable localities, though definitely reported from only two counties.

Vigo (Blatchley); Lake (Barnes); Hamilton and Marion (Wilson).

C. AMONUM Mill. Silky Cornel. Kinnikinnik.

(*C. sericea* L.)

Distributed throughout the State in wet soils, although nowhere abundant.

Flowers in June.

Reported as follows: Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Fayette (Hessler); Franklin (Meyncke); Falls of the Ohio, 1839 (Clapp); Steuben (Bradner); Lake and Jefferson.

C. ASPERIFOLIA Michx.

A rather tall shrub flowering in May and June. It finds its best development in dry, sandy soil. Its reported stations are: Tippecanoe (Coulter); Putnam (MacDougal); Bartholomew (Barnes); Knox (Spillman).

C. BAILEYI Coult. and Evans.

Found only in sandy soil in the northern portions of the State. Reported from Lake County by Rev. E. J. Hill and from the dune regions of the southern shore of Lake Michigan by Dr. Cowles. In this latter situation it intergrades with *C. stolonifera*, with which it has perhaps been confused.

C. STOLONIFERA Michx. Red-osier Dogwood.

Absent from the extreme southern counties, but abundant in northern counties. It usually is found in wet places, although occurring also in numerous dune associations under xerophytic conditions. Its free multiplication by subterranean suckers or prostrate shoots causes it to form at times extended clumps.

It flowers in June and July.

The reported stations are: Vigo and Monroe (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Barnes); Lake (Hill); Marion; Lagrange (Barnes); Hamilton (Wilson); Steuben (Bradner.)

C. CANDIDISSIMA Marsh. Panicled Cornel.

(*C. paniculata* L'Her.)

Frequents low, wet thickets and is also frequently found along river banks.

Flowers in June.

A diffusely branched shrub, of from three to six feet in height.

Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (Coulter); Kosciusko (Chipman); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ALTERNIFOLIA L. f.

Occasionally tree-like in our area, although as a rule a shrub. It is more abundant in the northern part of the State, and also of larger size. In Monroe County it is found chiefly on hillsides, but in the northern counties it is found in thickets in rather dry situations.

The stations are: Tippecanoe (Cunningham); Jefferson (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); St. Joseph (Rothert); Franklin (Meyncke); Hamilton (Wilson); Steuben (Bradner).

The form in Indiana is too small to be of economic value. In many parts of the State it occurs in low, rich woods or on borders of streams and swamps.

NYSSA L. Sour-gum Tree. Tupelo.

N. SYLVATICA Marsh. Black or Sour Gum.

Found in small numbers in many counties, especially in the southern part of the State. Its greatest development both in numbers and size seems to be in the southeastern counties. It is found, however, as far north as Lake and Noble counties. Along streams it reaches considerable size, but in drier localities is much smaller.

Flowering period, April and May.

The uncleavable character of the wood makes it difficult to work, although it is occasionally used in the manufacture of hubs.

Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Menycke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Hamilton (Doane); Steuben (Bradner); Lake; Fayette (Hessler).

N. AQUATICA L. Large Tupelo.

(*N. uniflora* Wang.)

A large tree, sometimes reaching a height of 100 feet, usually found in deep swamps. In Indiana it is found at times removed from swamps, but never in a very dry situation.

It flowers in April.

The wood is soft and as yet is not used in manufacture except occasionally for wood pulp.

Kosciusko (Coulter); Monroe (Blatchley); Putnam (MacDougal); Dearborn (Collins); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Lake (Barnes); Hamilton and Marion (Wilson).

Series 2.

GAMOPETALÆ.

PYROLACEÆ. Wintergreen Family.

PYROLA L.

P. ROTUNDIFOLIA L. Round-leaved Wintergreen.

In the northern counties in dry, sandy soil, usually in shaded places. Nowhere abundant.

Flowers in June and July.

Noble (Van Gorder); Lake; Steuben (Bradner).

P. CHLORANTHA Sw. Greenish-flowered Wintergreen.

In sandy soils in dry localities in the extreme northern part of the State. Not abundant in any station.

Flowers in June and July.

Lake (Hill).

P. ELLIPTICA Nutt. Shin-leaf.

In shaded places in a few counties of the State, chiefly northern. Grows in a rich, sandy loam soil.

Flowering season, July and August.

Lake (Hill); Porter; Steuben; Kosciusko (Chipman); Monroe.

P. SECUNDA L. Serrated Wintergreen.

Of exceptional occurrence in the extreme northern counties. In sandy thickets and dry soil.

Flowers in June and July.

Lake; Porter; Steuben (Bradner).

CHIMAPHILA Pursh.**C. MACULATA (L.) Pursh. Spotted Wintergreen.**

Not uncommon in many counties of the State, growing in dry woods and thickets. Mass distribution in the northern counties.

Flowers in June and July.

Putnam (MacDougal); Franklin (Meyncke); Jefferson; Monroe; Lake; Porter.

C. UMBELLATA (L.) Nutt. Pipsissewa.

Occasionally found in a few counties, chiefly northern. Found in dry soils in shaded places.

Flowers from June until August.

Noble (Van Gorder); Jefferson; Lake; Steuben (Bradner); Monroe.

MONOTROPACEÆ. Indian-pipe Family.**MONOTROPA L.****M. UNIFLORA L. Indian Pipe.**

Widely distributed throughout the State. Of frequent occurrence but in no place abundant. Indicative of rich soil and usually growing in moist woods. It occasionally occurs on dry wooded hillsides in the southern counties.

Flowers from June until August.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Noble (Van Gorder); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Hamilton (Wilson); Steuben (Bradner).

HYPOPITYS Adans.

H. HYPOPITYS (L.) Small. False Beech-drops.

(*Monotropa Hypopitys* L.)

Occasional in various parts of the State, growing in dry woods. Neither so widely distributed nor abundant as the preceding.

Flowering season, from June until October.

Monroe and Vigo (Blatchley); Cass (Hessler); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson; Hamilton (Wilson).

ERICACEÆ. Heath Family.

ANDROMEDA L.

A. POLIFOLIA L. Wild Rosemary.

In a few localities in the northern part of the State, growing in sphagnum swamps and peat bogs. Quite abundant in the stations in which it occurs.

Flowers in May and June.

Fulton (Hessler); Noble (Van Gorder); Steuben (Bradner).

CHAMÆDAPHNE Moench.

C. CALYCVLATA (L.) Moench. Leather-leaf.

(*Cassandra calyculata* Don.)

In swampy places in the northern part of the State. Common in its various stations, which are, however, few in number.

Flowering season, April and May.

Fulton (Hessler); Noble (Van Gorder); Lake; Porter; Steuben (Bradner); Starke (Blatchley).

EPIGÆA L.

E. REPENS L. Trailing Arbutus. Mayflower.

Found chiefly in the northern counties in sandy soils. An isolated station is found in Monroe County, where the species grows quite plentifully upon several rocky hillsides.

Flowers in March and April.

Monroe (Blatchley); Laporte (Coulter); Porter (Cowles); Lake and Montgomery.

GAULTHERIA L.

G. PROCUMBENS L. Spring or Creeping Wintergreen.

Confined to the northern counties of the State, growing in wet, pine woods. Extends south as far as Cass County, where it is frequent in wet, shaded places, especially near tamarack swamps.

Flowers in July and August.

Cass (Hessler); Noble (Van Gorder); Lake and Porter; Steuben (Bradner).

Has been taken by me on the "Devil's Back-Bone" at Pine Hills, Montgomery County. (W. S. B.)

ARCTOSTAPHYLOS Adans.

A. UVA-URSI (L.) Spreng. Red Bearberry. Barren Myrtle.

Found only in the dry, sandy soils in the dune regions of the southern shores of Lake Michigan, where it occurs in abundance.

Flowers in May and early June.

Lake and Porter.

VACCINIACEÆ. Huckleberry Family.

GAYLUSSACIA H. B. K.

G. FRONDOSA (L.) T. and G. Tangleberry.

Occasional in southern counties on damp hillsides and in ravines.

Flowering specimens collected May 22.

Clark (Baird and Taylor).

G. RESINOSA (Ait.) T. and G. Black or High-bush Huckleberry.

In various parts of the State, usually quite abundant in the stations in which it is found. It grows in sandy thickets and woods, occasionally being found in sandy open stretches.

Flowers in May and June, fruit ripening in August.

Cass (Hessler); Jefferson (Barnes); Monroe (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Lake and Porter; Steuben (Bradner).

VACCINIUM L.

V. CORYMBOSUM L. Tall Blueberry.

In northern part of State in wet, sandy alluvial soils. Not found in drift soils. It ranges somewhat generally in the swamp regions.

Flowers in May and June, fruit ripening late in August or in September.

Herbarium specimens from but one locality.

Cass and Fulton (Hessler); Steuben (Bradner).

V. CANADENSE Richards. Canada Blueberry.

In moist places in the northern part of the State.

Flowering season, from May until June, fruit ripening from July until August.

Steuben (Bradner).

V. PENNSYLVANICUM Lam. Dwarf or Sugar Blueberry.

Widely ranging through the northern counties in thin, dry, sandy soils, usually in open woods.

Flowers in May and June, fruit ripening early in August and largely marketed.

Few definite reports of stations.

Cass (Hessler); Kosciusko (Coulter); Monroe; Lake (Hill).

V. VACILLANS Kalm. Low Blueberry.

In dry, sandy soil, in a few counties. Not abundant in any of its stations.

Flowering in May and June, fruit ripening in August.

Monroe, Lake, and Porter.

V. PALLIDUM Ait. Mountain Blueberry.

(*V. corymbosum pallidum* Gray.)

In the northern counties in sandy soils in woods. Fairly abundant in the stations where it occurs.

Flowering in May and June, fruit ripening in August.

A valuable fruit form.

Noble (Van Gorder); Kosciusko (Coulter); Lake (Hill).

V. STAMINEUM L. Squaw Huckleberry.

Plentiful in many parts of the State, being the prevailing form in the southern counties. Especially abundant in the "Knob" region. Fruit largely marketed.

Flowers in April and May. Fruit ripe in August.

Johnson and Floyd (Barnes); Clark (Baird and Taylor); Lake and Monroe.

OXYCOCCUS Hill.**O. OXYCOCCUS (L.) MacM. Small Cranberry.**

(*Vaccinium Oxycoccus* L.)

In sphagnum swamps and peat bogs in the northwestern part of the State in sparing numbers.

Flowers in June and July. Fruit ripens in September.

Lake (Hill).

O. MACROCARPUS (Ait.) Pers. Large Cranberry.(*Vaccinium macrocarpon* Ait.)

Common in northern parts of the State in open places, tamarack swamps and peat bogs. Largely marketed from Marshall and adjoining counties.

Flowers in June and July. Fruit ripens in September.

Fulton and Marshall (Hessler); Noble (Van Gorder); Jay (Phinney); Steuben (Bradner).

PRIMULACEÆ. Primrose Family.**HOTTONIA** L.**H. INFLATA** Ell. Featherfoil.

Reported from a few localities in the southern part of the State. It is found in shallow, stagnant pools adjoining swamps or streams.

Flowers in June and July.

Gibson and Posey (Schneck).

SAMOLUS L.**S. FLORIBUNDUS** H. B. K. Water Pimpernel.(*S. Valerandi Americanus* Gray.)

Throughout the State in marshes, shallow streams and damp shaded places. Of greatest abundance in the southern part of the State.

Flowers from May until September.

Putnam and Vigo (Blatchley); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Jefferson (J. M. Coulter); Fayette (Hessler); Hamilton (Wilson); Monroe, Marion, and Elkhart; Hamilton (Wilson); Steuben (Bradner).

LYSIMACHIA L.**L. QUADRIFOLIA** L. Whorled Loosestrife.

In a few counties of the State, though in no special abundance. In dry shades in rather coarse soil.

Flowering season, June and July.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Franklin (Meyncke); Tippecanoe (Stevenson); Monroe; Steuben (Bradner).

L. TERRESTRIS (L.) B. S. P. Bulb-bearing Loosestrife.*(L. stricta Ait.)*

Somewhat common in the northern part of the State in swamps and wet shades. It usually grows most freely in black loam.

Flowers in July and August.

Cass (Hessler); Laporte (Barnes); Lake (Hill); Monroe; Steuben (Bradner).

L. NUMMULARIA L. Moneywort.

Found only in the southern part of the State in wet places along the banks of streams. Usually abundant in stations in which it is found.

Flowers in July and August.

Monroe (Blatchley); Clark (Baird and Taylor); Gibson and Posey (Schneck); Franklin (Meyncke); Knox (Spillman); Jefferson.

STEIRONEMA Raf.**S. CILIATUM (L.) Raf. Fringed Loosestrife.**

Widely distributed throughout the State and plentiful in locations found. In moist thickets and low, wet grounds adjoining lakes, in association with *S. lanceolatum*, it frequently covers large areas.

Flowers in July and August.

Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Tippecanoe (Cunningham); Cass (Hessler); Hamilton and Marion (Wilson); Fayette (Hessler); Jefferson, Gibson, Monroe, Carroll, and Elkhart; Steuben (Bradner).

S. LANCEOLATUM (Walt.) Gray. Lance-leaved Loosestrife.

Of wide distribution in the State and usually abundant. It is found in greatest profusion in moist, alluvial soils, growing along ditches and sluggish streams and upon low lake margins. Its habit varies greatly as the water content of the soil changes, the changes being especially noticeable in the leaf.

Flowers in July and August.

Jefferson (J. M. Coulter); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson (Schneck); Monroe and Vigo (Blatchley); Vermillion (Wright); Kosciusko (Chipman); Steuben (Bradner).

S. QUADRIFLORUM (Sims) Hitchc. Prairie Moneywort.*(S. longifolium Gray.)*

From the north central counties, southward in increasing abundance. Found in moist soils along rivers or about the margins of swamps and lakes.

Flowering in June and July.

Tippecanoe (Cunningham); Cass (Hessler); White (Hussey); Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Decatur (Ballard); Jefferson, Gibson and Monroe; Steuben (Bradner).

NAUMBURGIA Moench.**N. THYRSIFLORA (L.) Duby. Tufted Loosestrife.***(Lysimachia thyrsiflora L.)*

Sparingly in moist places in the central and northern parts of the State.

Flowers from May until July.

Tippecanoe (Hussey); Noble (Van Gorder); St. Joseph (Rothert); Kosciusko (Chipman); Marion and Lake; Hamilton (Wilson); Steuben (Bradner).

TRIENTALIS L.**T. AMERICANA Pursh. Chickweed. Wintergreen.**

Found quite abundantly in certain counties. Especially plentiful in tamarack swamps, which seem to furnish its best conditions.

Flowering season, May and June.

Fulton (Hessler); Noble (Van Gorder); Lake (Hill).

ANAGALLIS L.**A. ARVENSIS L. Poor Man's Weather Glass.**

In dry, waste places in the southern part of the State, not being reported north of Monroe County. It is found in considerable abundance along roadsides, usually in a sandy or gravelly soil.

Flowering from May through August.

Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Monroe.

CENTUNCULUS L.

C. MINIMUS L. False Pimpernel.

Reported from a single station in the southern part of the State.

Flowering specimens collected in April.

Clark (Baird and Taylor).

DODECATHEON L.

D. MEADIA L. Shooting Star. Pride-of-Ohio.

In all parts of the State, but in much greater abundance in the southern part. Found in moist soils and on wet rocks. Occasionally in poor development in dry soil in open places.

Flowers from April through June.

Jefferson (Barnes); Clark (Baird and Taylor); Delaware, Jay, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Monroe (Blatchley); Noble (Van Gorder); Owen (MacDougal); Tippecanoe (Cunningham); Cass and Fayette (Hessler).

EBENACEÆ. Ebony Family.

DIOSPYROS L.

D. VIRGINIANA L. Persimmon. 'Possum Plum.

Abundant in the southern counties, where it reaches its greatest development. According to Ridgway, in the southwestern counties it exceptionally reaches a height of 115 feet and a diameter of two feet. It occurs but rarely north of the central counties.

The wood is heavy, strong, compact and susceptible of a high polish. It is used for shoe-last, plane-stocks, etc., and is preferred to all other woods for shuttles. In old trees the heart wood is very dark, being almost black. The timber will undoubtedly come into general use for special articles of manufacture and should be preserved. The persimmon is now being largely cultivated for its fruit, the persimmon orchards in Orange County supplying a constantly increasing market. At least three types, varying sharply in fruit characters, are distinguished popularly, though not recognized botanically.

Flowers in May and June. Fruit ripe after a few sharp frosts.

Jefferson and Tippecanoe (Coulter); Orange (Troop); Gibson and Posey (Schneck); Clark (Baird and Taylor); Floyd (Clapp); Monroe and Vigo (Blatchley).

STYRACACEÆ. Storax Family.

MOHRODENDRON Britton.

M. CAROLINUM (L.) Britton. Rattle Box. Snowdrop Tree.

(Halesia tetraptera L.)

Reported only from near Evansville. A tree 35 to 50 feet high and from 15 to 20 inches in diameter, with light, soft-grained, compact wood of light-brown color.

Flowers in April and May.

Vanderburgh.

OLEACEÆ. Olive Family.

FRAXINUS L.

F. AMERICANA L. White Ash.

Generally distributed throughout the State, usually in rich soils. In wet lands it becomes greatly enlarged at the base. A large tree of the highest economic value. In common with many of the hardwood forms of the United States, it reaches its highest development in the lower Wabash basin. According to Ridgway, a height of 140 feet is not uncommon, and clean trunks of from 80 to 90 feet are occasionally found. Its uses are too well known to need repetition.

Flowering season, April and May.

Distribution so general as to make the mention of specific stations needless.

F. LANCEOLATA Borck. Green Ash.

(F. viridis Michx. f.)

Rather abundant in the southern part of the State, less so farther north. The species finds its highest development in low, rich bottom lands along streams. The form reaches a height of from 50 to 60 feet and a diameter of from 18 to 24 inches. The wood is much inferior in quality to that of the white ash, for which it is often substituted.

Flowering season, April and May.

The range includes the southern counties, the form extending northward chiefly along the lines of the principal drainage channels.

F. PENNSYLVANICA Marsh. Red Ash.

(F. pubescens Lam.)

This species is found sparingly in a few counties of the State, growing along the borders of streams in moist alluvial soils. It

reaches a height in our area of from 40 to 60 feet, rarely exceeding two feet in diameter. The wood is much less valuable than that of the white ash, with which, however, it is often confounded.

Flowering season, April and May.

Reported from following counties: Tippecanoe (Cunningham); Floyd and Knox; Gibson.

F. CAROLINIANA Mill. Water Ash.
(*F. platycarpa* Michx.)

Found in cypress swamps in the southwestern counties. Collected in quantity by Dr. J. Schneck and verified by him at the Shaw Botanical Gardens, St. Louis. Flowers in March and April.

F. QUADRANGULATA Michx. Blue Ash.

A tall, slender tree found sparingly in nearly every part of the State. Its usual location is in hilly regions, although occasionally extending its range to bottom lands. Its highest development is in the rich alluvial soils of the lower Wabash, where it exceptionally reaches a height of from 100 to 115 feet. The wood is heavy and hard, but not strong. It is largely used for flooring and in carriage building.

Flowering season, March and April.

As it ranges through the State, its specific stations are omitted.

F. NIGRA Marsh. Black Ash. Hoop Ash. Water Ash.
(*F. sambucifolia* Lam.)

Well distributed through the State, though never in very great abundance. From 80 to 100 feet high and from 18 to 24 inches in diameter. Wood not strong, but easily separating into thin layers, giving it especial value in interior finish, cabinet making, for barrel hoops, basket making, etc.

Flowering season, April and May.

Specific stations omitted because of general range.

ADELIA P. Br.

A. ACUMINATA Michx. Privet.
(*Forestiera acuminata* Poir.)

This southern form is reported as occurring only in Gibson and Posey counties. It is a small tree of from 20 to 30 feet in height and of a diameter of about six to eight inches. Not frequent and of no economic value. Found usually in low, wet alluvial soils.

Flowers in March and April.

Gibson and Posey.

LOGANIACEÆ. *Logania* Family.

SPIGELIA L.

S. MARYLANDICA L. Indian or Carolina Pink.

A showy plant growing in rich woods. Reported from a single county.

Flowering season from May until July.

Marion (Moffatt).

GENTIANACEÆ. *Gentian* Family.

SABBATIA Adans.

S. ANGUSTIFOLIA (Michx.) Britton. Narrow-leaved *Sabbatia*.

(*S. brachiata* Ell.)

Occasional in the southern part of the State in somewhat clayey moist soils. Reported definitely from a single county.

Flowering from May until August.

Jefferson (J. M. Coulter).

S. ANGULARIS (L.) Pursh. Rose-Pink.

In various counties usually in moist and rich sandy loams, near the borders of lakes or the lowlands of sluggish streams. Frequently found in considerable profusion in almost pure sand on the beaches of the smaller inland lakes. The flowers are very attractive and slightly fragrant.

Flowers in July and August.

Tippecanoe (Cunningham); Cass (Hessler); Franklin (Meyncke); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Kosciusko (Coulter); Lake (Blatchley).

GENTIANA L.

G. CRINITA Froel. Fringed *Gentian*.

In damp, usually rich soils, in open woods or meadows. Quite frequent in its range, but never abundant. Confined to the central and northern counties, not being reported south of Marion County.

Flowers in September and October.

Cass (Hessler); Noble (Van Gorder); Wayne (Phinney); Kosciusko (Chipman); Marion (Hessler); Steuben (Bradner); Lake and Wabash (Blatchley).

G. DETONSA Rottb. Smaller Fringed Gentian.

(*G. serrata* Gunner.)

Sparingly found in a few counties in damp soils, in the northern part of the State. The stations are not infrequent, but only a few plants are found in any locality.

Flowers in August and September.

Tippecanoe (Cunningham); Noble (Van Gorder).

G. QUINQUEFOLIA L. Stiff Gentian. Ague-weed.

(*G. quinqueflora* Lam.)

Found in widely separated counties, usually in moist, hillside thickets, less commonly in low grounds. Probably to be found throughout the State.

Flowers in September and October.

Tippecanoe (Cunningham); Franklin (Meyncke); Noble (Van Gorder); Vigo (Blatchley); Marion; Steuben (Bradner); Fayette (Hessler).

G. QUINQUEFOLIA OCCIDENTALIS Gray.

(*G. quinqueflora occidentalis* Gray.)

Reported only from the "Knob" region in southern Indiana, where it was collected by Dr. Clapp in 1837. No subsequent record for the State.

Floyd (Clapp).

G. PUBERULA Michx. Downy Gentian.

Found in southern counties of the State in open places in dry soil. Name of collector not accompanying specimens.

Flowering in August and September.

Harrison and Washington.

G. SAPONARIA L. Soapwort Gentian.

Occasional in wet soils in open places. Perhaps found in many counties, but of definite report only by Mr. Blatchley.

Collected in flower in September.

Vigo (Blatchley); Lake and Laporte.

G. ANDREWSII Griseb. Closed Gentian.

Of general distribution throughout the State, growing in moist, rich soils, in shaded places. Quite abundant in the stations in which it is found.

Flowers in September and October.

Tippecanoe (Dorner); Cass and Fayette (Hessler); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Hamilton (Wilson); Steuben (Bradner).

G. FLAVIDA A. Gray. Yellowish Gentian.

(*G. alba* Gray.)

Widely distributed in moist, rich soils and usually quite frequent in its stations.

Flowers in September and October.

Tippecanoe (Cunningham); Vigo and Monroe (Blatchley); Cass (Hessler); Noble (Van Gorder); Gibson and Posey (Schneck); Steuben (Bradner); Lake.

FRASERA Walt.

F. CAROLINENSIS Walt. American Columbo.

In many counties of the State in dry, rich soils, but nowhere common.

Flowers from May until in July.

Cass (Hessler); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Kosciusko (Chipman); Steuben (Bradner); Tippecanoe; Monroe and Vigo (Blatchley).

OBOLARIA L.

O. VIRGINICA L. Pennywort.

Confined to the southern counties of the State, where it is occasionally found in rich woods and thickets. The species probably entered our flora from the south. Not reported from north of Monroe and Vigo counties.

Flowering season, April and May.

Vigo and Monroe (Blatchley); Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor).

BARTONIA Muhl.

B. VIRGINICA (L.) B. S. P. Yellow Bartonian.

(*B. tenella* Muhl.)

In moist soil in open woods.

Flowering season from July to September.

Lake (Hill).

MENYANTHACEÆ. Buckbean Family.

MENYANTHES L.

M. TRIFOLIATA L. Marsh Bean. Bean Trefoil.

In peat bogs and sphagnum swamps in the northern counties only, extending through the line of swamps and small lakes as far south as Cass County. Abundant in its various stations.

Flower season in our area, May and June.

Kosciusko (Chipman); Cass, Fulton, and Marshall (Hessler); Noble (Van Gorder); Lake (Hill); St. Joseph (Rothert); Steuben (Bradner); Starke (Blatchley).

APOCYNACEÆ. Dogbane Family.

AMSONIA Walt.

A. AMSONIA (L.) Britton.

(*A. Tabernæmontana* Walt.)

Reported from a single station in the southern part of the State. Abundant herbarium material verifies the reference. Grows in moist soil.

Collected in flower May 27, 1894.

Daviess (Clements); Gibson and Posey.

VINCA L.

V. MINOR L. Periwinkle. Myrtle.

Largely escaped from cultivation, especially in southern parts of the State. Large areas are frequently entirely taken by the species.

Flowers very early, February through May.

Hamilton and Marion (Wilson); Montgomery.

APOCYNUM L.

A. ANDROSÆMIFOLIUM L. Spreading Dogbane.

Found in several counties of the State, usually in dry, sandy soil. More abundant in the northern than in the southern counties. Found in field and thickets.

Flowers in July and August.

Tippecanoe (Cunningham); Cass (Hessler); St. Joseph (Barnes); Lake (Hill); Vigo (Blatchley); Kosciusko (Coulter); Hamilton (Wilson); Steuben (Bradner).

A. CANNABINUM L. Indian Hemp.

In fields and thickets, of wider distribution and more abundant than the preceding. It is frequently a very attractive plant in dry, open fields, where in some localities it is the dominant plant form.

Flowers from July to September.

Tippecanoe (Cunningham); Daviess (Clements); Cass and Fayette (Hessler); Vermillion (Wright); Jefferson and Kosciusko (Coulter); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

ASCLEPIADACEÆ. Milkweed Family.**ASCLEPIAS L.****A. TUBEROSA L. Butterfly Weed. Pleurisy Root.**

One of the most brilliant of the genus in our bounds. Widely distributed and very abundant. It is found in dry soil, sandy or gravelly, and at times gives character to miles and miles of railroad embankments.

Begins flowering in June, but the mass flowering being in August.

Clark (Baird and Taylor); Dearborn (Collins); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Owen (MacDougal); Tippecanoe (Cunningham); Vigo (Blatchley); Kosciusko (Coulter); Hamilton (Wilson); Steuben (Bradner); Cass and Marshall (Hessler).

A. PURPURASCENS L. Purple Milkweed.

Found in many counties in dry fields and thickets, and along roadsides. Frequently associated with *A. tuberosa*. The form is very difficult at times to separate from the preceding, almost perfect intergradations occurring where the species grow together over large areas.

Flowering season July to October.

Daviess (Clements); Vigo (Blatchley); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Franklin (Meyneke); Hamilton (Wilson); Kosciusko (Coulter).

A. INCARNATA L. Swamp Milkweed.

Found in marshes and wet soils throughout the State. Of greater abundance in the northern part.

Flowering from July through September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

A. PULCHRA Ehrh. Hairy Milkweed.

(*A. incarnata pulchra* Pers.)

Found in similar localities and associated with the preceding. Very difficult to separate the two forms, where they grow together in large quantities. This species and *incarnata* probably have the same range, but definite reports have come from only two counties.

Flowers July through September.

Jefferson (J. M. Coulter); Carroll.

A. OBTUSIFOLIA Michx. Blunt-leaved Milkweed.

An early flowering form occurring in dry, sandy soils in a few counties in the State. It is nowhere abundant but probably of wider distribution than the reports indicate.

Flowers from May through the summer.

Tippecanoe (Hussey); Floyd (Clapp); Lake and Vigo (Blatchley); Clark (Baird and Taylor); Gibson (Schneck).

A. EXALTATA (L.) Muhl. Poke Milkweed. Tall Milkweed.

(*A. phytolaccoides* Pursh.)

In thickets and woods in moderately damp soil throughout the State. In many collections confused with *A. variegata*, a much less widely distributed form.

Flowers in June and July, extending through September.

Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Hussey); Fayette (Hessler); Kosciusko (Chipman); Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

A. VARIEGATA L. White Milkweed.

In dry woods and thickets, never very abundant and confined largely to the southern counties of the State. It prefers sandy or gravelly soils, though occasionally found in clays.

Flowering season short, covering June and July.

Daviess (Clements); Monroe (MacDougal); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Vigo (Blatchley); Jefferson and Marion.

A. QUADRIFOLIA Jacq. Four-leaved Milkweed.

A form of wide distribution, easily recognized by the middle leaves being usually in whorls of four. It is found in thickets or light woods usually in sandy or light, dry soil.

Flowers from May until the latter part of July.

Clark (Clapp); Jefferson (Barnes); Daviess (Clements); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Coulter); Floyd (Clapp); Monroe and Vigo (Blatchley); Fayette (Hessler); Decatur and Shelby (Ballard).

A. SYRIACA L. Common Milkweed. Silkweed.

(*A. Cornuti* Decaisne.)

The most abundant member of the genus in the State, and of general recognition. It grows in fields and waste places, usually in rather dry soils, although at times found in good development in the low, damp grounds adjoining lakes.

Flowering from June through August.

Tippecanoe (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Dearborn (Collins); Decatur and Shelby (Ballard); Fayette (Hessler); Monroe and Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner).

A. PERENNIS Walt. Thin-leaved Milkweed.

Found in wet soils, chiefly the low bottom lands along streams in a few southern counties.

Flowers from May through summer.

Owen (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (Coulter); Daviess (Clements).

A. VERTICILLATA L. Whorled Milkweed.

Easily recognized by its narrowly linear, sessile leaves, which are usually arranged in whorls of from three to seven. A dry soil form, ordinarily found on high ground in sandy soil. More abundant in northern part of its range.

Flowers from July until September.

St. Joseph (Barnes); Clark (Baird and Taylor); Cass and Marshall (Hessler); Vigo (Blatchley).

ACERATES Ell.**A. VIRIDIFLORA (Raf.) Eaton. Green Milkweed.**

The species in our State is confined in its mass distribution to dry, sandy soils of the northern counties. It is occasionally found in rocky regions farther south.

Flowers from June through September.

St. Joseph (Barnes); Tippecanoe (Hussey); Clark (Baird and Taylor); Lake (Hill); Elkhart; Steuben (Bradner).

A. FLORIDANA (Lam.) Hitchc.

(*A. longifolia* Ell.)

Found in moist, rich soils, usually the loams along streams or about small inland lakes. More common in the northern counties, occasionally found, however, in the southern part of the State.

Flowers from June through September.

Tippecanoe (Cunningham); Cass (Hessler); Jasper (Barnes); Gibson and Posey (Schneck); Kosciusko (Coulter).

AMPELANUS Raf.**A. ALBIDUS (Nutt.) Britton.**

(*Enslenia albida* Nutt.)

A trailing form that has entered our flora from the south. Confined to the southern counties, its northern record being Vigo County. It is found growing in wet soils usually on the banks of streams or in bottom land thickets. Usually abundant in the stations where it occurs.

Flowers in June and July.

Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Vigo (Blatchley).

VINCETOXICUM Walt.

V. GONOCARPOS Walt. Large-leaved Angle-pod.

(*Gonolobus laevis macrophyllus* Gray.)

In moist thickets in the southern part of the State. Herbarium specimens are labelled "southern Indiana," so no definite counties can be given. The collections were probably made in the southwestern counties, the form having entered our flora from the south rather than the east.

V. GONOCARPOS LÆVIS (Michx.) Britton.

(*Gonolobus laevis* Michx.)

Along the banks of streams in rich, wet soils, in the southwestern counties. Of sparing occurrence.

Gibson and Posey (Schneck).

CONVOLVULACEÆ. Morning-glory Family.

QUAMOCLIT Moench.

Q. COCCINEA (L.) Moench. Cypress Vine. Indian Pink.

(*Ipomœa Quamoclit* L.)

Escaped from gardens somewhat extensively in the southern part of the State. It nowhere wanders far from its original station, not leaving cultivated grounds, or those recently abandoned. Apparently unable to maintain itself in the midst of the original plants of the area.

Flowers in July and August.

Clark (Baird and Taylor); Gibson and Posey (Schneck); Jefferson.

IPOMŒA L.

I. PANDURATA (L.) Meyer. Man-of-the-Earth. Wild Potato Vine.

Abundant in sandy soils and cultivated fields in many parts of the State. The trailing or climbing weak stems give little evidence of the enormous fleshy root from which they spring. This root habit makes it very difficult to exterminate when it has fairly established itself and has given it a place among the worst weeds in many localities.

Flowering begins in May and continues through the summer.

Tippecanoe (Cunningham); Jefferson and Kosciusko (Coulter); Clark (Baird and Taylor); Dearborn (Collins); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Decatur (Ballard); Fayette (Hessler); Vigo (Blatchley).

I. LACUNOSA L. Small-flowered White Morning-glory.

Abundant in low, wet soils in many counties of the State. Along meadow streams and in the low lands about lakes it is frequently the prevailing plant form. Much more abundant in the southern counties.

Flowers from July until October.

Tippecanoe (Cunningham); Jefferson (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Franklin (Meyncke); Vigo (Blatchley); Kosciusko (Coulter); Hamilton and Marion (Wilson).

I. PURPUREA (L.) Roth. Morning-glory.

Escaped from cultivation in all parts of the State, occurring in waste grounds or invading cultivated fields. As an escape, it flowers with less profusion than when under cultivation, and the flowers are smaller.

Flowers from July through September.

Jefferson (Barnes); Dearborn (Collins); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Decatur (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson).

I. HEDERACEA Jacq. Ivy-leaved Morning-glory.

Of less general distribution than the preceding, but occurring in similar locations. Also found in alluvial soils along streams. In common with the other members of the genus, it prefers soils with an admixture of sand.

Kosciusko (Chipman); Putnam (MacDougal); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Marion; Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson).

CONVOLVULUS L.**C. SEPIUM L. Hedge Bindweed.**

(*C. sepium Americanus* Sims.)

A moist soil form in fields and thickets. Frequently very abundant and annoying. Widely distributed in situations indicated and also in alluvial sands.

Flowers from June through September.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Putnam (MacDougal); Noble (Van

Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Decatur (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

C. REPENS L.

In dry soils in the central part of the State. Somewhat common where found.

Hamilton and Marion (Wilson); Steuben (Bradner).

C. SPITHAMAEUS L. Upright Bindweed.

Not uncommon in dry, sandy or rocky situations, more frequently upon hills and banks. Neither so widely distributed nor abundant as the preceding. Easily recognized by the two large bracts which nearly enclose the calyx.

Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); St. Joseph (Rothert); Jefferson and Floyd.

C. ARVENSIS L. Small Bindweed.

In fields and waste places in several parts of the State, in dry, preferably sandy or gravelly soils. Known locally in a few places as "cornbind."

Flowers from May through August.

Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Marion (Hessler); Lake (Hill); Vigo (Blatchley).

CUSCUTACEÆ. Dodder Family.

CUSCUTA L.

C. ARVENSIS Beyrich. Field Dodder.

Sparingly found throughout the State in fields upon various herbs, rarely upon low shrubs. The difficulty of discrimination in this genus has resulted in most botanists leaving the species severely alone, hence the reports upon distribution are relatively meagre.

Flowers in July and August.

Dearborn (Collins); Lake (Hill).

C. POLYGONORUM Engelm. Smart-weed Dodder.

(*C. chlorocarpa* Engelm.)

One of the most abundant of our dodders. It is found in very great abundance in moist, rich soil, parasitic upon various species

of *Polygonums* and other herbs. It attacks almost any fairly succulent herbaceous plant and makes a remarkably rapid growth when it has secured attachment to the host. Its orange-yellow color makes it of fairly easy recognition. It is very difficult to exterminate when it has once obtained a foothold.

Flowers from late in July until September. More abundant in northern counties.

Marion and Lake; Vigo (Blatchley); Kosciusko (Coulter); Tippecanoe (Wright); Montgomery (J. M. Coulter).

C. CEPHALANTHI Engelm. Button-bush Dodder.

(*C tenuiflora* Engelm.)

Parasitic upon shrubs and tall, hard-stemmed herbs. In our area more frequently found upon the Button-bush than any other form. Probably found throughout the State, but definitely reported from but few counties.

Flowers in July and August.

Lake (Hill); Hamilton (Wilson).

C. GRONOVII Willd. Common Dodder.

Our most widely distributed and abundant form. Parasitic on herbs and low shrubs, and preferring rather moist soils, though thriving well in dry fields. All the *Cuscutas* are variable, but this species has a very wide range of variation in both habit and character of its station.

Flowers in July and August.

Jefferson (Barnes); Putnam (MacDougal); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

C. COMPACTA Juss. Compact Dodder.

Not uncommon on shrubs, but not nearly so abundant as the preceding forms. It has probably not been separated by collectors from *C. Gronovii* on the one hand and *C. paradoxa* on the other. In our range it is ordinarily found in rather dry regions, and seems better able to resist excess sunlight than the other members of the genus.

Flowers in July and August.

Posey and Gibson (Schneck); Montgomery (Cunningham).

C. PARADOXA Raf. Glomerate Dodder.*(C. glomerata Choisy.)*

A very characteristic species parasitic upon the larger compositæ. Found also upon other strong herbs. The flower clusters run together, forming dense masses, so that at times, the host plants seems to be encircled with a small rope. These confluent flower masses are frequently over an inch wide and deep. With us the species seems to prefer the Great Ragweed, though also largely found upon various species of sunflower.

Flowers from July through September.

Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Tippecanoe (Cunningham); Jefferson (Barnes); Kosciusko (Coulter); Hamilton and Marion (Wilson); Harrison.

POLEMONIACEÆ. Phlox Family.**PHLOX L.****P. PANICULATA L. Garden Phlox.**

Found in many parts of the State in shaded places, usually in rich moist soils. A favorite location is near streams or in their bordering thickets.

Flowers in June, continuing through August.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Jay (Phinney); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Fayette (Hessler); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson).

P. MACULATA L. Wild Sweet-William.

In many counties growing in soils either on the borders of open places or in deep woods. It is for the most part indicative of rich soil. White forms also occur in some localities.

Flowers in June and July.

Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); St. Joseph (Rothert); Decatur and Shelby (Ballard); Tippecanoe (Coulter); Hamilton (Wilson); Fayette (Hessler).

P. OVATA L. Mountain Phlox.

Reported only from the hill regions of southern Indiana. The form is of the mountains, and its extension of range into Indiana is questionable. Admitted on herbarium specimens labelled as from "southern Indiana."

Flowers in June and July.

Clark (Baird and Taylor); Jefferson.

P. GLABERRIMA L. Smooth Phlox.

Well distributed through the State in moist, rich soils, occurring on prairies or in rather light woods. It is possible that the forms referred to *P. ovata* are broad-leaved forms of this species.

Begins to flower in May, and continues through August.

Tippecanoe (Hussey); Jefferson and Jasper (Barnes); Clark (Baird and Taylor); Daviess (Clements); Gibson and Posey (Schneck); Jay (Phinney); Vigo (Blatchley); Vermillion (Wright).

P. PILOSA L. Downy Phlox.

In dry, rather sandy, loose soil in the northern counties; in damp prairies and borders of woods in the southern counties. Distributed widely, but more abundant in the northern part of its range.

Flowers from April through June.

Tippecanoe (Cunningham); Daviess (Clements); Johnson (Barnes); Vigo (Blatchley); Noble (Van Gorder); Jefferson (J. M. Coulter); Dearborn (Collins); Clark (Baird and Taylor); Gibson and Posey (Schneck); St. Joseph (Rotherth); Knox (Spillman); Steuben (Bradner); Cass (Hessler).

P. AMÆNA Sims. Hairy Phlox.

A species entering our flora from the south and confined to the southern counties where it is sparingly found. Occurs in dry, upland places.

Flowering in May and June.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck).

P. DIVARICATA L. Wild Blue Phlox.

The most widely distributed and abundant species of the genus. It is found in ravines, open woods, thickets or wherever moist, rich soil and shade occur. Usually very abundant in thickets bordering streams.

Flowering from April through June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meynecke); Gibson and Posey (Schneck); Vermillion (Wright); Knox (Spillman); Decatur and Shelby (Ballard); Fayette and Cass (Hessler); Hamilton and Marion (Wilson).

P. BIFIDA Beck. Cleft Phlox.

On sandy hillsides and dry open woods in several counties. Ordinarily in considerable quantity in the stations where found. Probably of general occurrence.

Flowers in April and May, at times continuing through June in the northern part of the State.

Lake, Starke, Vigo, and Monroe (Blatchley); Tippecanoe (Coulter).

P. SUBULATA L. Ground or Moss Pink.

In extremely dry, sandy or rocky soils. Its low habit of growth and botanically unpromising stations have doubtless prevented more numerous reports of its occurrence. Probably found in most of the northern counties.

Flowers from April through June.

Tippecanoe (Cunningham); Clark (Baird and Taylor); Kosciusko (Coulter); Jefferson and Montgomery.

POLEMONIUM L.

P. REPTANS L. Jacob's Ladder. Greek Valerian. Blue-bells.

In shaded, rather damp places throughout the state. The Indiana forms are of stronger stem habit, and the entire plant more hairy than indicated by descriptions. The same is true of Illinois forms examined. A comparison with eastern material at the Gray herbarium shows that the western form is easily distinguished by the characters indicated.

Flowers in April and May.

Tippecanoe (Cunningham); Hamilton and Marion (Wilson); Daviess (Clements); Jefferson (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meynecke); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Putnam (MacDougal); Vermillion (Wright); St. Joseph (Kizer); Decatur (Ballard); Fayette (Hessler); Knox (Spillman).

HYDROPHYLLACEÆ. Water-leaf Family.

HYDROPHYLLUM L.

H. VIRGINICUM L. Virginia Water-leaf.

In shaded places, in moist, rich soils. Of much greater abundance in the southern counties, though found in suitable localities in the northern tier of counties.

Flowers from April until August.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Vigo (Blatchley); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Decatur (Ballard); Fayette (Hessler); Steuben (Bradner).

H. MACROPHYLLUM Nutt. Large-leaved Water-leaf.

In rich, damp situations in woods and ravines. Not so abundant as the other species of the genus, but found in greater or less numbers in every part of the State. More common in southern counties.

Flowers in May and June.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler); Hamilton and Marion (Wilson).

H. APPENDICULATUM Michx.

In the same soils as the preceding. Found throughout the State and quite abundant wherever the conditions of wet soil and light shade are found.

Flowers in May and June.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Franklin (Meyncke); Decatur (Ballard); St. Joseph (Rothert); Fayette (Hessler); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

H. CANADENSE L. Broad-leaved Water-leaf.

In woods and the sides of deep ravines. The species requires more shade than the other members of the genus and is apparently less dependent upon soil moisture. Not specially common.

Flowers in June and July.

Vigo and Monroe (Blatchley); Jefferson (J. M. Coulter); Putnam (MacDougal); Clark (Baird and Taylor); Laporte.

MACROCALYX Trew.**M. NYCTELEA (L.) Kuntze.**

(*Ellisia Nyctelea* L.)

Found only in moist soils in the southern part of the State. Added to the flora by W. S. Blatchley.

Flowers in April and May.

Vigo (Blatchley); Knox (Spillman).

PHACELIA Juss.**P. BIPINNATIFIDA Michx.** Loose-flowered Phacelia.

Common in the southern counties of the State in moist, rich soils, usually in hilly places or in woods. The only northern report is from Cass County.

Flowers in April and May.

Daviess (Clements); Cass (Hessler); Jefferson (Barnes); Clark (Baird and Taylor); Franklin (Meyneke); Gibson and Posey (Schneck); Vigo (Blatchley); Hamilton and Marion (Wilson).

P. PURSHII Buckley.

A very beautiful form quite widely distributed, and having its best development in moist, rich soils. It is also found in sandy, open woods and has invaded fields in some cases as a weed.

Flowers from April through June.

Tippecanoe (Cunningham); Cass (Hessler); Dearborn (Collins); Clark and Jefferson (Barnes); Vigo (Blatchley); Noble (Van Gorder); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Fayette (Hessler); Marion; Hamilton (Wilson).

BORAGINACEÆ. Borage Family.**HELIOTROPIUM L.****H. INDICUM L.** Wild Heliotrope.

Sparingly found in waste places and along streams in the southern counties of the State.

Flowering season, from May until the frosts.

Daviess (Clements); Jefferson (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Vigo (Blatchley).

CYNOGLOSSUM L.

C. OFFICINALE L. Hound's Tongue.

Abundant throughout the State in waste places and along roadsides. Ordinarily found in dry, coarse soil. The form is easily recognized by means of its fetid odor and purple corolla.

Flowering season, from May until October.

Tippecanoe (Cunningham); Hamilton and Marion (Wilson); Jefferson (Barnes); Putnam (MacDougal); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Vermillion (Wright); Decatur and Shelby (Ballard); Fayette (Hessler); St. Joseph (Rothert); Vigo (Blatchley); Steuben (Bradner).

C. VIRGINICUM L. Wild Comfrey.

In more shaded places, preferring rather dry soils. Less widely distributed and less common than preceding.

Flowers from June through August.

Tippecanoe (Cunningham); Daviess (Clements); Clark (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyncke); Gibson and Posey (Schneck); Vigo (Blatchley); Steuben (Bradner).

LAPPULA Moench.

L. LAPPULA (L.) Karst. Stickseed. Burseed.

(*Echinosperrum Lappula* Lehm.)

Throughout the State in open waste places and abandoned fields in dry soil. In certain localities an annoying weed.

Flowers from April until August.

Tippecanoe (Cunningham); Jennings and Bartholomew (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Jefferson (J. M. Coulter); Franklin (Meyncke); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

L. VIRGINIANA (L.) Greene.*(Echinosperrum Virginicum Lehm.)*

Common in all parts of the State in dry soil in shaded places. Found in open woods, thickets or along fence rows.

Flowers from June until late in September.

Tippecanoe (Cunningham); Putnam (MacDougal); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyneke); Gibson and Posey (Schneck); Daviess (Clements); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

MERTENSIA Roth.**M. VIRGINICA (L.) DC. Smooth or True Lungwort. Blue-bells.**

In low, wet grounds and along streams, usually in rather shaded places. Common in most parts of the State, but especially abundant in the southern counties. Somewhat cultivated for ornament, but objectionable because of its rapid spread.

Flowers in March and April.

Cass and Fayette (Hessler); Jefferson (Barnes); Putnam (MacDougal); Clark (Baird and Taylor); Wayne (Phinney); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Knox (Spillman); Vigo (Blatchley); Hamilton (Wilson).

MYOSOTIS L.**M. PALUSTRIS (L.) Lam. Forget-me-not.**

Added to the State flora by Mr. Blatchley. Growing in damp, low places and not at all abundant.

Flowers in May.

Vigo (Blatchley).

M. LAXA Lehm. Smaller Forget-me not.

In wet, muddy places. Reported from Porter County by Rev. E. J. Hill.

Flowers from May until July.

M. VIRGINICA (L.) B. S. P. Spring Scorpion Grass.*(M. verna Nutt.)*

Confined to a few southern counties, where it is found on dry, rocky hillsides.

Flowers in April and May.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Franklin (Meyneke); Gibson and Posey (Schneck); Harrison.

LITHOSPERMUM L.

L. ARVENSE L. Corn Gromwell.

Indicative of dry, usually sandy soil. Found in many parts of the State, but especially abundant in the northern counties. It is found along railways, in waste places, sometimes taking possession of cultivated fields.

Flowers from May until late in August.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Jefferson (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); St. Joseph (Rothert); Knox (Spillman); Vigo (Blatchley); Lake; Hamilton and Marion (Wilson); Steuben (Bradner).

L. OFFICINALE L. Gromwell.

Dry soil in fields and waste places. Common in the southern counties, not found in the northern.

Flowering from May until August.

Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Jefferson and Tippecanoe.

L. LATIFOLIUM Michx. American Gromwell.

In various parts of the State in dry soil in thickets or waste fields. Prefers sandy or gravelly soil and is more abundant in the northern counties.

Flowers in May and June.

Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyncke); Gibson and Posey (Schneck); Fayette (Hessler); Vigo (Blatchley).

L. GMELINI (Michx.) A. S. Hitchcock. Hairy Puccoon.

(*L. hirtum* Lehm.)

Common in dry, sandy soil throughout the State. A conspicuous member of the flora of the dune region. Very abundant wherever found, but of more numerous stations in the northern part of the State.

Flowers from April through June.

Cass (Hessler); Laporte (Barnes); Vigo (Blatchley); Noble Van Gorder); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Tippecanoe (Noel); Knox (Spillman); Steuben (Bradner).

L. CANESCENS (Michx.) Lehm. Hoary Puccoon.

Dry, sandy soils on prairies and along roadsides or railways. Especially abundant in the northern counties.

Tippecanoe (Cunningham); Daviess (Clements); Vigo (Blatchley); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); St. Joseph (Rothert); Knox (Spillman).

L. ANGUSTIFOLIUM Michx. Narrow-leaved Puccoon.

In dry soil, especially on prairies or in open places. It prefers, as do the other species of the genus, sandy or gravelly, rather loose soil. According to reports, confined chiefly to the southern counties.

Flowering in May and June.

Vigo (Blatchley); Gibson and Posey (Schneck); Steuben (Bradner); Tippecanoe.

ONOSMODIUM Michx.**O. CAROLINIANUM (Lam.) DC. Shaggy False Gromwell.**

Confined for the most part to the southern counties, though found sparingly in the north-central parts. It frequents dry, gravelly soil and is generally found along roadsides or in waste fields.

Flowers in May and June.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Tippecanoe (Cunningham); Hamilton (Wilson).

O. MOLLE Michx. Soft-hairy False Gromwell.

(*O. Carolinianum molle* Gray).

Open places in dry, sandy or rocky soil. Reported only south. Flowers May and June.

Clark (Baird and Taylor).

O. VIRGINIANUM (L.) DC.

Not common. Reported only from the eastern counties of the State as occurring on dry, rocky slopes.

Collected in flower in June.

Jay, Delaware, Randolph, and Wayne (Phinney).

SYMPHYTUM L.

S. OFFICINALE L. Comfrey. Healing Herb.

Rather common in southern counties, occurring in dry, waste places.

Flowers in June and July.

Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Marion; Monroe and Vigo (Blatchley).

ECHIUM L.

E. VULGARE L. Viper's Bugloss. Blueweed.

Somewhat sparingly found in the northern part of the State in coarse soils. It usually follows railroad embankments and is becoming more common within the past few years. Definite reports from but two counties.

Flowers in June and July.

Kosciusko (Hessler); Tippecanoe (Coulter).

VERBENACEÆ. Vervain Family.

VERBENA L.

V. OFFICINALIS L. European Vervain.

Rare in the southeastern part of the State, where its presence was noted by Dr. Robert Hessler as a migrant. It occurs in dry, coarse soil.

Collected in flower in June.

Fayette (Hessler); Jefferson.

V. URTICIFOLIA L. White or Nettle-leaved Verbena.

Common in most parts of the State in waste places, indicative of dry soil. A coarse, unsightly plant, hybridizing with several other species of the genus. According to Britton and Brown, it hybridizes with *V. bracteosa*, *V. hastata* and *V. stricta*.

Flowers from June through September.

Tippecanoe (Cunningham); Jefferson and Kosciusko (Coulter); Daviess (Clements); Fayette (Hessler); Putnam (MacDougal); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

V. HASTATA L. Blue Wild Verbena.

In moist, grassy fields and in waste places in most parts of the State. More abundant and of better development in dry soils.

Flowers from June until in September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Fayette (Hessler); Hamilton and Marion (Wilson); Vigo (Blatchley); Steuben (Bradner).

V. ANGUSTIFOLIA Michx. Narrow-leaved Wild Verbena.

In dry, light sandy soils and on high banks of streams. According to Dr. Hessler, especially common in "wind-blown sandy soils which barely cover the underlying limestone." Hybridizes with *V. stricta* and *V. bracteosa*.

Daviess (Clements); Cass (Hessler); Jefferson (Barnes).

V. STRICTA Vent. Mullen-leaved Verbena.

Quite abundant in several counties and probably occurring throughout the State. Hybridizes with *V. bracteosa*. Dry, waste places.

Flowers from June until October.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Kosciusko (Coulter); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

V. BRACTEOSA Michx. Large-bracted Verbena. Prostrate Verbena.

Widely distributed in the State and ordinarily quite abundant. It frequents dry, open places or exposed sand and gravel banks.

Flowers from May until September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Fayette (Hessler); Hamilton and Marion (Wilson); Monroe and Vigo (Blatchley); Gibson.

V. CANADENSIS (L.) Britton. Large-flowered Verbena.

(*V. Aubletia* L.)

In dry soil in the southern part of the State.

Flowers from May until August.

Jefferson and Gibson.

LIPPIA L.

L. LANCEOLATA Michx. Fog-fruit.

In moist soils in low places throughout the State. Usually abundant in the stations in which it is found.

Flowers from early in June through August.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Fayette (Hessler); Decatur (Ballard); Putnam (MacDougal); Kosciusko (Coulter); Vigo (Blatchley); Hamilton and Marion (Wilson).

LABIATÆ. Mint Family.

TEUCRIUM L.

T. CANADENSE L. Wood Sage.

Widely distributed and abundant, occurring in moist, rich soils. Its favorite stations seem to be the banks of streams and borders of marshes.

Flowers from June until the early frosts.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Vermillion (Wright); Fayette (Hessler); Hamilton and Marion (Wilson); Vigo (Blatchley); Steuben (Bradner).

ISANTHUS Michx.

I. BRACHIATUS (L.) B. S. P. False Pennyroyal.

(*I. cœruleus* Michx.)

An inconspicuous form found in the southern counties in sandy soils, chiefly along the banks of streams. Rather common.

Flowering season, July and August.

Jefferson (Barnes); Union (MacDougal); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler).

TRICHOSTEMA L.

T. DICHOTOMUM L. Bastard Pennyroyal. Blue Curls.

First detected by Dr. B. W. Evermann as a member of the State flora and reported by Professor Blatchley. It occurs sparingly in sandy soil on river banks.

Collected in flower in September.

No additional stations have been reported.

Vigo (Blatchley).

SCUTELLARIA L.

S. LATERIFLORA L. Mad-dog Skullcap.

In wet soils throughout the State. Especially abundant at borders of wet thickets and in the low lands surrounding marshes and lakes.

Flowers from July through September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck);

Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Knox (Spillman); Round Lake (Deam); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. SERRATA Andr. Showy Skullcap.

Reported from but few counties as occurring sparingly in damp woods. A very handsome species of easy recognition.

Flowers in June and July.

Gibson and Posey (Schneck).

S. INCANA Muhl. Downy Skullcap.

(*S. canescens* Nutt.)

Quite abundant in many parts of the State. It is usually found in moist soils, although it is reported by Mr. Blatchley as "frequent in dry, open woods" in Vigo County.

Flowers in June and July.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Vermillion (Wright); Vigo (Blatchley); Hamilton and Marion (Wilson); Fayette (Hessler).

S. CORDIFOLIA Muhl. Heart-leaved Skullcap.

(*S. versicolor* Nutt.)

In most parts of the State in moist, shaded localities, found most abundantly in thickets and woods. The plant in our area stands for rich soils.

Flowers in June and July.

Jefferson and Tippecanoe (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Fayette (Hessler).

S. PILOSA Michx. Hairy Skullcap.

Reported from southern part of the State as occurring in dry, sandy or rocky soil. Not common.

Flowers in May and June.

Putnam (MacDougal); Clark (Baird and Taylor); Dearborn (Collins); "Knobs" (Clapp).

S. PILOSA HIRSUTA (Short) Gray.

In similar situations. Plant stouter, and with larger, coarsely crenate leaves. Reported from but one county.

Flowers in June and July.

Putnam (MacDougal).

S. PARVULA Michx. Small Skullcap.

An early blooming form found in a few counties in moist, sandy soil.

Flowers from April until June.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Clark (Baird and Taylor); Crawford (Barnes); Monroe (Hessler).

S. GALERICULATA L. Marsh Skullcap.

In swamps and very wet soils. Extremely abundant in many of its northern stations. Found throughout the State.

Flowers in July and August.

Tippecanoe (Cunningham); Cass (Hessler); Laporte (Barnes); Noble (Van Gorder); Clark (Baird and Taylor); Lake (Hill); Round Lake (Deam); Kosciusko (Coulter); Marion; Steuben (Bradner).

S. NERVOSA Pursh. Veined Skullcap.

In damp, shaded places in rich soils throughout the State. Its favorite stations are heavy thickets and dense woods.

Flowers from May through the summer.

Daviess (Clements); Monroe and Vigo (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Floyd (Clapp); Marion (Wilson).

MARRUBIUM L.**M. VULGARE L. White Hoarhound.**

In the southern and central parts of the State, not reported from north of Tippecanoe. In waste places and fields in rather dry soil.

Flowering begins in June and continues until the heavy frosts.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

AGASTACHE Clayt.

A. NEPETOIDES (L.) Kuntze. Giant Hyssop. Giant Catnip.
(*Lophanthus nepetoides* Benth.)

In shaded, moist places in many counties. Its greater abundance is found in the southern counties.

Flowers from July until September.

Franklin (Meyncke); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

A. SCROPHULARIÆFOLIA (Willd.) Kuntze. Figwort Giant Hyssop.
(*Lophanthus scrophulariæfolius* Benth.)

Of wider distribution and greater abundance than the preceding. In dry, upland soils in shaded places.

Flowers from July until the frosts.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Vigo (Blatchley).

A. ANETHIODORA (Nutt.) Britton. Fragrant Giant Hyssop.
(*Lophanthus anisatus* Benth.)

A western form which has obtained a lodgment in the eastern and southern part of the State. Found in dry, open places.

Flowers in July and August.

Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor).

NEPETA L.

N. CATARIA L. Catnip. Catmint.

Abundant in all parts of the State in waste places in rather dry soil. Best development is found where there is light shade. Perhaps the most commonly recognized member of our flora.

Flowers from July until the heaviest frosts.

Tippecanoe (Cunningham); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Jefferson (J. M. Coulter); Noble (Van Gorder); Clark (Baird and Taylor); Dearborn (Collins); Gibson and Posey (Schneck); Vermillion (Wright); Fayette (Hessler); Decatur and Shelby (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

GLECOMA L.

G. HEDERACEA L. Ground Ivy. Wild Myrtle. Gill-over-the-Ground.
(*Nepeta Glechoma* Benth.)

Abundant and widely distributed. Found in moist soils, frequently driving out all other forms.

Flowers in March, continuing through May, though occasional flowers may be found until September.

Tippecanoe (Cunningham); Daviess (Clements); Fayette (Hessler); Monroe and Vigo (Blatchley); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

BRUNELLA L.

B. VULGARIS L. Heal-all. Self-heal. Blue Curls.
(*Brunella vulgaris* L.)

Abundant in various situations, but reaching its highest development in dry soils. Found, however, largely in low, damp grounds.

Flowers from May until late in the fall.

Tippecanoe (Cunningham); Daviess (Clements); Carroll and Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Fayette (Hessler); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

PHYSOSTEGIA Benth.

P. VIRGINIANA (L.) Benth. False Dragonhead.

Of general occurrence in all parts of the State. Found in greatest profusion and highest development in low, damp soils. The purple corolla is often variegated with white.

Flowering season begins in July and continues through September.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Jefferson and Jasper (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Dearborn (Collins); Owen (MacDougal); Daviess (Clement); Monroe and Vigo (Blatchley); Hamilton and Marion (Wilson).

SYNANDRA Nutt.

S. HISPIDULA (Michx.) Britton.

(S. grandiflora Nutt.)

One of the handsomest Labiates in our territory. It is confined to the southern part of the State and is nowhere abundant. Found in rich, damp soils in shaded places.

Flowering in May and June.

Vigo, Monroe, and Putnam (Blatchley); Jefferson (J. M. Coulter); Franklin (Meyneke); Wayne (Phinney); Hamilton (Wilson).

GALEOPSIS L.

G. TETRAHIT L. Hemp-Nettle.

Admitted to the flora upon the authority of the State Catalogue of Coulter and Barnes. It is probably found in many parts of the State, but I have not seen an Indiana collection nor has report of its occurrence been made to me. Dry soils in abandoned fields.

Marion and Jefferson.

LEONURUS L.

L. CARDIACA L. Motherwort.

Common in waste places and along fence rows in dry soils.

Flowers from June until September.

Tippecanoe (Cunningham); Hamilton and Marion (Wilson); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Fayette (Hessler); Steuben (Bradner); Vigo (Blatchley).

LAMIUM L.

L. AMPLEXICAULE L. Henbit.

In various counties of the State, but never abundant. Usually found along the edges of gardens or in fields but recently abandoned.

Its flowering season begins in February and continues until October.

Daviess (Clements); Jefferson (Barnes); Franklin (Meyneke); Noble (Van Gorder); Dearborn (Collins); Clark (Baird and Taylor); Putnam (MacDougal); Fayette (Hessler).

L. PURPUREUM L. Red Dead Nettle.

In waste and cultivated soils.

Flowers from April until October.

Steuben (Bradner).

STACHYS L.**S. HYSSOPIFOLIA Michx. Hyssop Hedge Nettle.**

In moist, shaded locations in the northern counties of the State.

Flowering season, July and August.

Laporte (Barnes); Lake (Hill); Marion.

S. TENUIFOLIA Willd. Smooth Hedge Nettle.

(*S. aspera glabra* Gray.)

In damp fields and thickets, chiefly in the southern counties. Not abundant.

Flowers in June and July.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Vigo (Blatchley).

S. PALUSTRIS L. Common Hedge Nettle.

Widely distributed and abundant, occurring in moist soils. Locally known as Rough-weed.

Flowering from June until September.

Tippecanoe (Cunningham); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Kosciusko (Chipman); Knox (Spillman); Fayette (Hessler); Putnam (MacDougall); Hamilton and Marion (Wilson).

S. ASPERA Michx. Rough Hedge Nettle.

In moist soil, very frequent along streams and canals and on the borders of lakes. Of general distribution in the State.

Flowers from June through August.

Tippecanoe (Cunningham); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

S. CORDATA Riddell. Light-green Hedge Nettle.

In very damp shaded places. Widely distributed but not found in especial abundance at any of its stations.

Flowers in July and August.

Vigo (Blatchley); Jefferson (Barnes); Putnam (MacDougal); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Fayette (Hessler).

SALVIA L.**S. LYRATA** L. Lyre-leaved Sage.

In dry, sandy soil in thickets or light woods. Found only in a few counties.

Flowers from May through July.

Crawford (Blatchley); Jefferson (Barnes); Marion and Clark.

MONARDA L.**M. DIDYMA** L. Oswego Tea. Bee Balm.

Sparingly found in a few counties, occurring in moist soils along streams and in partially drained swamps.

Flowers in July and August.

Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

M. FISTULOSA L. Horsemint. Wild Bergamot.

Found under various soil and moisture conditions, but most frequent in dry sand or gravel soils. It also occurs largely in our area in recently drained lowlands. Very abundant in all parts of the State and easily recognized by its strong, rather unpleasant odor.

Flowers from June through August.

Tippecanoe (Cunningham); Daviess (Clements); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Round Lake (Deam); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

M. SCABRA Beck. Pale Horsemint.*(M. fistulosa mollis Benth.)*

This western form is reported by Mr. Blatchley as being found along the Vandalia railway at a single locality near Terre Haute.

Collected in flower in July.

Vigo (Blatchley).

M. BRADBURIANA Beck.

This species, which is rather southern and western in its general range, is found in many of the central and southern counties. It is found on dry slopes and in thin-soiled thickets.

Flowers from May through July.

Putnam (MacDougal); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck).

M. PUNCTATA L. Spotted Horsemint.

Less frequent than *M. fistulosa*, with which it is frequently associated. Occurs in dry soils in exposed places.

Flowers from July until October.

Laporte (Barnes); Noble (Van Gorder); Marion and southward.

Very common in Jasper, Lake, Porter, and Starke counties. (W. S. B.)

BLEPHILIA Raf.**B. CILIATA (L.) Raf.**

Abundant throughout the State in dry soils. Frequents open woods and thickets.

Flowers from June through August.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Putnam (MacDougal); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Hamilton (Wilson); Fayette (Hessler).

B. HIRSUTA (Pursh) Torr.

In similar locations as the preceding and very abundant in all parts of the State.

Flowers from June through August.

Jefferson (Barnes); Putnam (MacDougal); Noble (Van Gorder); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Clark (Baird and Taylor); Daviess (Clements); Vermillion (Wright); Tippecanoe (Cunningham); Fayette (Hessler); Marion and Hamilton (Wilson); Vigo (Blatchley); Steuben (Bradner).

HEDEOMA Pers.

H. PULEGIOIDES (L.) Pers. Pennyroyal.

Abundant in most parts of the State, growing in dry soils. It finds its best conditions in open woods or other light shaded places.

Flowers from June until October.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

MELISSA L.

M. OFFICINALIS L. Garden Balm.

In the southern and eastern counties of the State, usually in the neighborhood of abandoned gardens or old dwellings. Thoroughly established.

Flowers in June and July.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler).

SATUREIA L.

S. HORTENSIS L. Savory. Summer Savory.

Escaped, in waste places.

Flowering season from July until September.

Gibson.

CLINOPODIUM L.

C. VULGARE L. Wild Basil. Basil-weed.

(*Calamintha Clinopodium* Benth.)

Confined to the counties fronting the Ohio River, and there found but sparingly.

Flowering from June through September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter).

C. NEPETA (L.) Kuntze. Field Balm.

(*Calamintha Nepeta* Link and Hoffmansg.)

Only in southeastern part of State, growing in woods. Only occasional.

Flowering in July in our area.

Franklin (Meyncke).

C. GLABRUM (Nutt.) Kuntze.*(Calamintha (Nuttallii) Benth.)*

In various counties, chiefly northern and eastern. Most often found on wet limestone cliffs or in moist sands.

Flowering season, from May until August.

Jay, Delaware, Randolph, and Wayne (Phinney); Cass (Hessler); Lake (Hill).

C. GLABELLUM (Michx.) Kuntze.*(Calamintha glabella Benth.)*

Occasional along the banks of streams in a few counties. The form evidently entered our flora from the south, and is probably to be found in most of the counties adjoining the Ohio River.

Flowering in June.

Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney).

KÆLLIA Moench.**K. FLEXUOSA (Walt.) MacM. Narrow-leaved Mountain-mint.***(Pycnanthemum linifolium Pursh.)*

In dry, sandy soil about streams and lakes. Common in the northern counties of its range, less frequent in the southern.

Flowering from July until September.

Cass (Hessler); Vigo (Blatchley); Gibson and Posey (Schneck); Franklin (Meyncke); Clark (Baird and Taylor); Lake (Hill).

K. VIRGINIANA (L.) MacM. Mountain-mint.*(Pycnanthemum lanceolatum Pursh.)*

Widely distributed through the State and extremely abundant in many localities. It grows in dry, sandy soil in prairies or woods, and is especially abundant in the sandy loams back from the margins of the smaller lakes. In these localities it frequently pushes its way far down into the low bottom lands.

Flowers in July and August.

Tippecanoe (Cunningham); Daviess (Clements); Cass (Hessler); Owen and Putnam (MacDougal); Clark (Baird and Taylor); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Noble (Van Gorder); Gibson and Posey (Schneck); Hamilton (Wilson); Steuben (Bradner).

K. PILOSA (Nutt.) Britton. Hairy Mountain-mint.*(Pycnanthemum muticum pilosum Gray.)*

Only in southern counties, but there quite frequent on sandy hillsides and prairies.

Flowers July and August.

Gibson and Posey (Schneck); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

K. CLINOPODIOIDES (T. and G.) Kuntze.*(Pycnanthemum clinopodioides T. and G.)*

Reported only from southern Indiana, where it occurs in dry, rocky soil.

Collected in flower in August.

Clark (Baird and Taylor).

K. INCANA (L.) Kuntze. Hoary Mountain-mint.*(Pycnanthemum incanum Michx.)*

Confined to the southern counties, but there occurring in relative abundance in dry thickets or upon sandy slopes.

Flowers in August and September.

Monroe (Blatchley); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Daviess (Clements).

K. MUTICA (Michx.) Britton.*(Pycnanthemum muticum Pers.)*

A southern form, which, in common with many others from the same region, has obtained a foothold in the extreme southwestern counties of the State. It is found in sandy soil.

Flowers in July and August.

Gibson and Posey (Schneck).

CUNILA L.

C. ORIGANOIDES (L.) Britton. Sweet Horse-mint.*(C. Mariana L.)*

In the southern part of the State in dry, shaded locations. A not uncommon plant, easily recognized by its very aromatic odor.

Flowers in August and September.

Monroe (Blatchley); Johnson (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck).

LYCOPUS L.

L. VIRGINICUS L. Bugle-weed.

Common in extremely wet soil in many counties. More plentiful in the southern part of its range.

Flowers from late in June through September.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Noble (Van Gorder); Fayette (Hessler); Vigo (Blatchley); Hamilton (Wilson).

L. RUBELLUS Moench. Water Hoarhound.

Rather plentiful in wet soils in various parts of the State.

Flowering from July until October.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Shriner Lake (Deam); Steuben (Bradner).

L. AMERICANUS Muhl. Cut-leaved Water Hoarhound.

(*L. sinuatus* Ell.)

Well distributed through the State and frequent along streams and ditches and about the margins of lakes.

Flowers from June until the frosts.

Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Vigo (Blatchley); Kosciusko (Coulter); Johnson.

L. EUROPÆUS L. Water Hoarhound.

Reported from a single locality in southeastern Indiana by Dr. Robert Hessler. The general range is well to the east of Indiana. I have not seen Dr. Hessler's specimens, but admit the species to the list upon his collection.

Flowering September and October.

Fayette (Hessler); Hamilton (Wilson).

MENTHA L.

M. SPICATA L. Spearmint.

(*M. viridis* L.)

Common throughout the State in low, wet places.

Flowering from July until October.

Tippecanoe (Cunningham); Jefferson (Barnes); Union (MacDougal); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Daviess (Clements); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

M. PIPERITA L. Peppermint.

Borders of streams and in wet places throughout the State. Abundant in all suitable locations.

Flowers from July through September.

Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Noble (Van Gorder); Gibson and Posey (Schneck); Vermillion (Wright); Decatur and Shelby (Ballard); Round Lake (Deam); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

M. ARVENSIS L. Field Mint.

In a few parts of the State in dry fields and waste places. Known locally as "wild pennyroyal."

Flowers in July and August.

Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney).

M. SATIVA L. Marsh-whorled Mint.

Confined to a few counties bordering the Ohio River, where it is sparingly found in dry, waste places.

Flowers in July and August.

Jefferson (J. M. Coulter); Clark (Baird and Taylor).

M. CANADENSIS L. Wild Mint.

Of general distribution throughout the State. Found in moist soils and especially abundant about springs and shallow streams.

Flowers from July until October.

Laporte (Barnes); Carroll and Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Tippecanoe (King); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner).

COLLINSONIA L.**C. CANADENSIS L. Horse-balm.**

In moist, rich woods in many counties. More plentiful in southern part of State.

Flowers from July through October.

Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Noble (Van Gorder); Dearborn (Collins); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

SOLANACEÆ. Potato Family.

PHYSALODES Boehm.

P. PHYSALODES (L.) Britton. Apple of Peru.

(Nicandra physalodes Gaertn.)

In waste places in some southern counties. Somewhat common, but never far removed from abandoned gardens or house yards. Well established. The plant has the appearance of a large ground-cherry, with the leaves of the Jimson weed.

Flowers in July and August.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyncke); Fayette (Hessler); Hamilton and Marion (Wilson).

PHYSALIS L.

P. PUBESCENS L. Low, Hairy Ground Cherry.

Common in waste grounds, preferring sandy soil. Widely distributed throughout the State.

Flowers from July until October.

Tippecanoe (Cunningham); Daviess (Clements); Gibson and Posey (Schneck); St. Joseph (Barnes); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Vigo (Blatchley); Noble (Van Gorder); Jefferson (J. M. Coulter); Putnam (MacDougal); Vermillion (Wright); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

P. PRUINOSA L. Tall, Hairy Ground Cherry.

Reported from a single station as growing near a railroad. Certainly not of general occurrence.

Flowering in July and August.

Marion and Hamilton (Wilson).

P. ANGULATA L. Cut-leaved Ground Cherry.

A form growing in rich soil, in general found to the south and west of Indiana. It has been found in the central parts of the State, but has not been reported in the last ten years. Probably a migrant.

Marion.

P. PHILADELPHICA Lam.

Found as a rule at the edges of gardens or cultivated fields. It occurs in loose, rich soil, and while found in many counties, is nowhere abundant. Formerly cultivated for its fruit.

Flowers from July until October.

Daviess (Clements); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Noble (Van Gorder); Putnam (MacDougal); Decatur and Shelby (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson).

P. LANCEOLATA Michx. Prairie Ground Cherry.

In dry soil in open places or along the higher banks of streams. Found usually in fair abundance in any station which it occupies.

Flowers in July and August.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Vigo (Blatchley); Kosciusko (Chipman); Marion.

P. VIRGINIANA Mill.

Common in loose, sandy soil in the southern counties. Extremely variable in our range.

Flowers from July through September.

Vigo (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck).

P. HETEROPHYLLA AMBIGUA (A. Gray) Rydberg.

Reported from a single station in southern Indiana. It grows in rich soil, especially that recently tilled, and is probably of frequent occurrence in the State.

Knox (Spillman).

P. VISCOSA L.

Reported from a number of counties, but always as "scarce" or "rare." The species is of the seashore, and I am inclined to refer plants so labelled to *P. heterophylla*. Admitted tentatively.

Flowering from June until September.

Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Decatur (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

SOLANUM L.

S. NIGRUM L. Black or Garden Nightshade.

Common throughout the State, in shaded waste places. Often found close to walls. Never widely spreading.

Flowers from July through October.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Carroll (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Putnam (MacDougal); Decatur and Shelby (Ballard); Steuben (Bradner); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

S. CAROLINENSE L. Horse Nettle.

In dry fields, waste places and by roadsides. An annoying weed in the southern counties becoming less common in the northern. It prefers soils with considerable admixture of sand. Locally known as "Tread-soft" by the negroes in the southern counties.

Flowers from May until September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Vigo (Blatchley); Putnam (MacDougal); Vermillion (Wright); Decatur and Shelby (Ballard); Montgomery; Hamilton and Marion (Wilson); Fayette (Hessler).

S. ROSTRATUM Dunal. Sand Bur. Prickly Potato. Texas Nettle.

This species undoubtedly entered the State as a migrant, coming from the West. It was noted in Lake County in 1887, and in Vigo in 1888. As the species is included in all lists of the "worst weeds of the United States," it was feared that it would soon become troublesome. Since that time but few new stations have been reported, and where established the plant does not spread rapidly. Prefers sandy soils in open places.

Prefers sandy soils in open places.

Flowers from May through September.

Vigo (Blatchley); Lake (Hill); Madison (Walker); Marion (Hessler); Sullivan (Blatchley); Porter (Hill); Montgomery.

S. HETERODOXUM Dunal. Melon-leaved Nightshade.

An undoubted migrant which does not seem to have spread from the single station in which it was found. Its range as reported is west of the Mississippi River. Added to the flora by Dr. Hessler.

Monroe.

S. DULCAMARA L. Nightshade. Bittersweet. Poison Nightshade.

Chiefly southern in its distribution in the State, growing in moist shaded places. Found frequently at the edges of gardens and near brick walls. Locally it is thought that the leaves of this species are a virulent skin poison producing results as serious as in the case of poisoning from *Rhus radicans*. Repeated experiments upon myself and pupils failed to verify this opinion.

Flowering from May until late in September.

Jefferson (Barnes); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Marion; Kosciusko (Chipman); Steuben (Bradner).

LYCIUM L.

L. VULGARE (Ait. f.) Dunal. Matrimony Vine.

Somewhat largely escaped and in places becoming troublesome. It fails to establish itself in the northern part of the State, but in the southern it spreads rapidly. Generally found in thickets and waste places.

Flowers from May through August.

Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Steuben (Bradner).

DATURA L.

D. STRAMONIUM L. Jamestown or Jimson-weed. Thorn Apple.

In fields and waste places, growing especially rankly in old barnyards or in other rich soils. Common wherever found.

Flowers from June through September.

Steuben (Bradner); Tippecanoe (Cunningham); Daviess (Clements); Gibson and Posey (Schneck); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (J. M. Coulter); Putnam (MacDougal); Decatur and Shelby (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Vigo (Blatchley).

D. TATULA L. Purple-stemmed Jimson.

More common than the preceding with which it is generally associated and from which it is not popularly separated. Soil and flowering habits as the preceding species.

Tippecanoe (Cunningham); Daviess (Clements); Clark (Baird and Taylor); Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyncke); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (J. M. Coulter); Vermillion (Wright); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

SCROPHULARIACEÆ. Figwort Family.**VERBASCUM L.****V. THAPSUS L. Common Mullein. Velvet Plant.**

Widely spread through the State and usually abundant, but never becoming a troublesome weed. It is found in dry, rather loose soils, growing in exposed places. It occasionally takes almost entire possession of abandoned fields. An infusion of the roots is often used as a household remedy for malaria.

Flowers from June until the frosts.

Tippecanoe (Cunningham); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Decatur and Shelby (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

V. BLATTARIA L. Moth Mullein.

Widely distributed throughout the State, but much less common than the preceding. It is found in similar locations. The plant is said to repel the cockroach. It is much frequented by moths from which fact comes the popular name.

Flowers from June through September.

Tippecanoe (Cunningham); Vigo (Blatchley); Daviess (Clements); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Dearborn (Collins); Jennings (Barnes); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

LINARIA Juss.

L. LINARIA (L.) Karst. Butter and Eggs. Toad-Flax.
(*L. vulgaris* Mill.)

Abundant in waste places and along roadsides in most parts of the State. Not difficult to eradicate.

Flowers from June until September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyneke); Dearborn (Collins); Decatur and Shelby (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

L. CANADENSIS (L.) Dumont. Blue Toad Flax.

Found only in extreme northern part of the State in dry sandy soil.

Lake.

ANTIRRHINUM L.

A. MAJUS L. Great Snap-dragon.

Escaped from cultivation and well established in a few southern counties.

Flowers from June through August.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jefferson.

SCROPHULARIA L.

S. MARYLANDICA L. Pilewort. Heal-all.

(*S. nodosa Marylandica* Gray.)

Throughout the State in damp woods and thickets, preferring rich, muck or loam soils. While found in all parts of the State, it rarely occurs in great number in any single station.

Flowers from July through September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Carroll (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Jefferson (J. M. Coulter); Dearborn (Collins); Decatur (Ballard); St. Joseph (Rothert); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

CHELONE L.

C. GLABRA L. Snake-head. Turtle-head.

In marshes and low, wet grounds chiefly in the northern part of the State, though sparingly found as far south as Vigo County. Flowers from July until September.

Tippecanoe (Cunningham); Cass and Fayette (Hessler); Jefferson (J. M. Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Decatur (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

C. OBLIQUA L. Red Turtle-head.

Reported from but few counties in the State. It is found in wet thickets and along streams or by the shores of lakes.

Flowers in July and August.

Gibson (Schneck); Hamilton and Marion (Wilson); Putnam (MacDougal).

PENTSTEMON Soland.

P. HIRSUTUS (L.) Willd. Hairy Beard-tongue.

(*P. pubescens* Soland.)

In dry woods and thickets, on the borders of prairies and on sandy or gravelly banks. Preferring soil heavily mixed with sand or gravel. Found throughout the State.

Flowers from May through July.

Daviess (Clements); Cass (Hessler); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Clark (Baird and Taylor); St. Joseph (Rothert); Hamilton (Wilson); Steuben (Bradner).

P. DIGITALIS (Sweet) Nutt. Foxglove.

(*P. laevigatus Digitalis* Gray.)

Found chiefly in the southern part of the State in rich, moist soil, usually in thickets or open woods. Not reported to occur north of Jay County.

Flowers in May and June.

Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Jennings (Barnes); Daviess (Clements); Hamilton and Marion (Wilson).

P. PENTSTEMON (L.) Britton. Smooth Beard-tongue.*(P. laevigatus Soland.)*

Common in moist woods and thickets in the southern counties, sparingly found in drift soils farther north. Not reported north of Cass County.

Flowers from May until July.

Daviess (Clements); Cass and Fayette (Hessler); Jefferson (J. M. Coulter); Jennings (Barnes); Vigo (Blatchley); Putnam (MacDougal); Clark (Baird and Taylor); Knox (Spillman); Marion.

COLLINSIA Nutt.**C. VERNA Nutt. Blue-eyed Mary. Innocence.**

In moist, shaded places in many counties, being much more common in the southern counties. The species is found sparingly, however, throughout the northern counties. Easily recognized by the differing colors of its upper and lower lips. One of the most attractive of our early flowers.

Flowers from April until June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Dearborn (Collins); Knox (Spillman); Tippecanoe (Coulter); Hamilton (Wilson); Steuben (Bradner).

MIMULUS L.**M. RINGENS L. Square-stemmed Monkey flower.**

In swamps and along the low banks of streams and lakes, preferring loam soil. Where sand cuts down through the loam, the species rapidly disappears. Widely distributed.

Flowers from June until September.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Clark (Baird and Taylor); Vermillion (Wright); Fayette (Hessler); Steuben (Bradner).

M. ALATUS Soland. Sharp-winged Monkey-flower.

In locations similar to the preceding and of equally wide distribution. It is the prevailing form in the northern part of the State.

Flowers from June through September.

Tippecanoe (Cunningham); Daviess (Clements); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

CONOBEA Aubl.**C. MULTIFIDA (Michx.) Benth.**

Along streams and on borders of ponds in sandy or gravelly soil. Well distributed through the State, but more abundant in southern counties.

Flowers from June through August.

Tippecanoe (Cunningham); Jefferson and Clark (Barnes); Vigo (Blatchley); Gibson and Posey (Schneck); Franklin (Meyneke); Daviess (Clements); Putnam (MacDougal); Fayette (Hessler).

GRATIOLA L.**G. VIRGINIANA L. Clammy Hedge Hyssop.**

In very damp soils along streams and ditches and by the borders of lakes and ponds. Confined to the southern part of the State for the most part, though found exceptionally northward.

Flowers from May until the early frosts.

Gibson and Posey (Schneck); Steuben (Bradner); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (VanGorder); Franklin (Meyneke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Vigo (Blatchley); Hamilton and Marion (Wilson).

G. SPHAEROCARPA Ell.

In low, wet places in the southern counties of the State, but nowhere abundant.

Flowers from June through August.

Vigo (Blatchley); Franklin (Meyneke); Monroe (Blatchley).

G. VISCOSA Schwein. Viscid Hedge Hyssop.

A southern form reported from a single county. Specimens so referred are in the DePauw herbarium. I have examined the specimens, and am inclined to believe they are correctly referred.

Collected in flower in June.

Putnam (MacDougal).

ILYSANTHES Raf.

I. GRATIOLOIDES (L.) Benth. False Pimpernel.

(*I. riparia* Raf.)

Widely distributed, growing in the rich, muck soils of the banks of rivers and lakes.

Flowers from July through August.

Tippecanoe (Cunningham); Clark and Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyneke); Carroll (J. M. Coulter); Hamilton and Marion (Wilson); Fayette (Hessler); Steuben (Bradner).

WULFENIA Jacq.

W. HOUGHTONIANA (Benth.) Greene.

(*Synthyris Houghtoniana* Benth.)

In dry, sandy soils in the northern half of the State, though found sparingly as far south as Vigo County.

Flowers in June.

Vigo (Blatchley); Tippecanoe (Wright); Kosciusko (Coulter); Noble (Van Gorder); Elkhart (Barnes); Lake.

VERONICA L.

V. ANAGALLIS-AQUATICA L. Water Speedwell.

In swamps and rather slow running, shallow streams. Fairly distributed through the State, but much more abundant in the northern half.

Flowers from May through August.

Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Cass and Fayette (Hessler); Union (MacDougal); Noble (Van Gorder); Jefferson (J. M. Coulter); Decatur (Ballard); Steuben (Bradner).

V. AMERICANA Schwein.

Found in similar locations as the preceding which it much resembles. Only occasionally found in the State, Indiana being somewhat south of the general range of the species.

Flowers from April through August.

Tippecanoe (Hussey); Franklin (Meyncke); Jefferson (J. M. Coulter).

V. SCUTELLATA L. Skullcap Speedwell.

In marshes and swamps in central and northern counties of the State. Not abundant.

Flowering season from May until late in September.

Tippecanoe (Cunningham); Noble (Van Gorder); Hamilton and Marion (Wilson); Steuben (Bradner).

V. OFFICINALIS L. Common Speedwell.

In dry fields and woods, well distributed through the State, and probably of general occurrence with perhaps the exception of the extreme northern counties.

Flowers from May through August.

Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Hamilton and Marion (Wilson); Fayette (Hessler); Tippecanoe (Wright); Steuben (Bradner).

V. CHAMÆDRYS L.

Reported only from the Purdue Campus. Probably a migrant brought in with packing materials or mixed with other seeds. The form maintained itself for a number of years, but has now disappeared.

Tippecanoe (Hussey).

V. SERPYLLIFOLIA L. Thyme-leaved Speedwell.

A common and widely distributed form occurring in fields and along roadsides.

Flowers from April until September.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Jefferson (Barnes); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Decatur (Ballard); Vigo (Blatchley); Hamilton and Marion (Wilson).

V. PEREGRINA L. Purslane Speedwell.

Our most common form of the genus. Found in waste places and cultivated grounds, frequently invading lawns.

Flowers from May through September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Knox (Spillman); Decatur (Ballard); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

V. ARVENSIS L. Corn Speedwell.

Usually in damp places, in many parts of the State. It multiplies more rapidly in tilled lands and sometimes becomes annoying in rich lawns.

Flowers from May until the frosts.

Putnam (MacDougal); Steuben (Bradner); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Knox (Spillman); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

V. AGRESTIS L. Garden Speedwell.

Upon authority of Dr. MacDougal, who reports it as found in Putnam County. The only record for the State.

LEPTANDRA Nutt.**L. VIRGINICA (L.) Nutt. Culver's-root.**

(*Veronica virginica* Nutt.)

Distributed throughout the State in rich, moist soils. Found most commonly in thickets and open woods, though also occurring in wet meadows.

Flowering from June until late in September.

Tippecanoe (Cunningham); Daviess (Clements); White (Hussey); Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Jefferson (J. M. Coulter); Hamilton (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

BUCHNERA L.

B. AMERICANA L. Blue-hearts.

In several widely separated counties, growing in dry, sandy or gravelly soil. Nowhere abundant.

Flowers from June through August.

Floyd, Harrison, and Lake.

AFZELIA J. G. Gmel.

A. MACROPHYLLA (Nutt.) Kuntze. Mullen Foxglove.

(*Seymeria macrophylla* Nutt.)

In rich, moist soils, along streams and in thickets. Confined to the central and southern counties in its mass distribution, though reported as far north as Montgomery County.

Flowers in August and September.

Vigo, Monroe, Montgomery, and Putnam (Blatchley); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Fayette (Hessler); Hamilton (Wilson).

DASYSTOMA Raf.

D. PEDICULARIA (L.) Benth. Fern-leaf Foxglove.

(*Gerardia Pedicularia* L.)

In dry woods in the northern part of the State. Probably of limited distribution.

Flowering late in August and in September.

Elkhart (Barnes); Tippecanoe (Noel); Steuben (Bradner).

D. FLAVA (L.) Wood. Downy False Foxglove.

(*Gerardia flava* L.)

In the northern part of the State in considerable abundance in dry woods and thickets. Extending south sparingly as far as Vigo County.

Flowering in July and August.

St. Joseph (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (J. M. Coulter); Vigo (Blatchley); Steuben (Bradner).

D. GRANDIFLORA (Benth.) Wood. Western False Foxglove.

(*Gerardia grandiflora* Benth.)

In dry woods and thickets in the northern part of State.

Flowers from July to August.

Steuben (Bradner).

D. VIRGINICA (L.) Britton. Oak-leaved False Foxglove.*(Gerardia quercifolia Pursh.)*

Quite abundant and of wide distribution in the State. Chiefly found in moist soils on shaded banks of streams or lake margins. Less frequently occurring in dry soil in open places. A very showy species in the flowering season.

Flowers from July until September.

Tippecanoe (Cunningham); Daviess (Clements); Johnson (Barnes); Jefferson (J. M. Coulter); Franklin (Meyneke); Gibson and Posey (Schneck); Vigo (Blatchley); Kosciusko (Coulter); Steuben (Bradner); Cass (Hessler).

GERARDIA L.**G. ASPERA Dougl. Rough Purple Gerardia.**

In the southwestern counties in dry prairies in rather heavy clay soil. Not abundant.

Flowers in August and September.

Gibson and Posey (Schneck).

G. PURPUREA L. Large Purple Gerardia.

Abundant and widely distributed in the State. Found in damp, open meadows and fields in rich soils. A very handsome species when in full flower.

Flowering season, August and September.

Tippecanoe (Cunningham); Daviess (Clements); Noble and Jefferson (Barnes); Lagrange (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Clark (Baird and Taylor); Knox (Spillman); Kosciusko (Chipman); Steuben (Bradner).

G. PAUPERCULA (Gray) Britton. Small-flowered Gerardia.

Reported from a single station in northern Indiana. It will probably be found to occur throughout the northern part of the inland lake region.

Collected in flower September 1.

Shriner Lake (Deam).

G. TENUIFOLIA Vahl. Slender Gerardia.

The most common of the *Gerardias* in the State. Found in many counties in abundance. It is found usually in dry soils on hills and in opens, but occasionally finds its way into damp places. Most luxuriant in our area in soil that is quite sandy.

Flowers from July through September.

Steuben (Bradner); Tippecanoe (Barnes); Jefferson (J. M. Coulter); Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Daviess (Clements); Fayette (Hessler).

G. BESSEYANA Britton.

(*G. tenuifolia macrophylla* Benth.)

Admitted upon the authority of Dr. L. M. Underwood, who reports the species from Putnam County. The only record for the State.

Putnam (Underwood).

G. SKINNERIANA Wood.

Occasional in the central part of the State, growing in dry soil in shaded places.

Flowers from August through October.

Hamilton (Wilson).

G. AURICULATA Michx. Auricled Gerardia.

In moist, open soils in the northern part of the State. Reported definitely from but a single station.

Collected in flower in August.

Tippecanoe (Cunningham).

CASTILLEJA Mutis.

C. COCCINEA (L.) Spreng. Scarlet Painted-cup. Indian Paint-brush.

Found in widely separated counties in varying situations. In the northern counties it usually occurs in meadows and damp thickets. In the southern, Mr. Blatchley notes it as common in "virgin prairie soil" near Heckland in Vigo County. In the northern part of its range it is usually not far removed from lakes.

Flowers from May until in July.

Vigo (Blatchley); Gibson and Posey (Schneck); Noble (Van Gorder); Cass (Hessler); Knox (Spillman); St. Joseph (Rothert); Steuben (Bradner).

PEDICULARIS L.

P. LANCEOLATA Michx. Swamp Lousewort.

In swamps and very wet, rich soils throughout the State. Not uncommon in any part of its range.

Flowers from August through September.

Tippecanoe (Cunningham); Fayette and Cass (Hessler); Gibson and Posey (Schneck); Jay (Phinney); Noble (Van Gorder); Putnam (MacDougal); Vigo (Blatchley); Marion (Wilson); Steuben (Bradner).

P. CANADENSIS L. Common Lousewort.

Quite abundant in many parts of the State. Found in dry, shaded places, either woods or thickets, in rather sandy soils.

Flowers from April through June.

Tippecanoe (Cunningham); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Putnam (MacDougal); Vigo (Blatchley); Steuben (Bradner).

MELAMPYRUM L.

M. LINEARE Lam. Narrow-leaved Cow-wheat.

(*M. Americanum* Michx.)

Found in the northern counties in dry woods and thickets.

Flowers from May until August.

Steuben (Bradner); Lake.

LENTIBULARIACEÆ. Bladderwort Family.

UTRICULARIA L.

U. CORNUTA Michx. Horned Bladderwort.

On borders of ponds or in bogs, in the northern counties.

Flowers from June to August.

Lake.

U. RESUPINATA B. D. Greene. Reversed Bladderwort.

In the sandy edges of lakes in the northern counties. Not uncommon.

Flowers from March until August.

Lake (Hill); Noble (Van Gorder); Round Lake (Deam).

U. PURPUREA Walt. Purple Bladderwort.

In shoal water of lakes and marshes in northern part of State.
Lake (Hill).

U. VULGARIS L. Greater Bladderwort.

Common in streams and ponds in the central and northern parts of the State.

Flowers in July and August.

Laporte (Barnes); Shriner Lake (Deam); Hamilton (Wilson); Kosciusko (Coulter); Steuben (Bradner); Cass (Hessler).

U. INTERMEDIA Hayne. Flat-leaved Bladderwort.

Throughout the State in shallow water along the margins of pools and ponds.

Flowers from June to August.

U. GIBBA L. Humped Bladderwort.

In the shallow water at the margins of lakes and pools, more frequently in mud. Added to the flora by Rev. E. J. Hill, whose labors have given us our chief knowledge of the aquatic and sand-dune flora of the State. Several stations were afterward added in Noble County by Mr. Van Gorder and in Steuben by Mr. Bradner.

Lake (Hill); Noble (Van Gorder); Kosciusko (Coulter); Steuben (Bradner).

OROBANCHACEÆ. Broom-rape Family.**THALESIA Raf.****T. UNIFLORA (L.) Britton. One-flowered Broom-rape. Cancer-root.**

(*Aphyllon uniflorum* T. and G.)

Not frequent, but found in many counties of the State, parasitic on the roots of herbs.

Flowers in May and June.

Tippecanoe (Cunningham); Clark (Barnes); Vigo (Blatchley); Marion.

T. FASCICULATA (Nutt.) Britton. Yellow Cancer-root.

(*Aphyllon fasciculatum* Gray.)

In the northern part of the State, generally associated with plants of the dunes, where it is found as a root parasite on *Artemisia Canadensis* and *Artemisia caudata*.

Lake (Hill); Porter (Cowles).

OROBANCHE L.

O. LUDOVICIANA Nutt. Broom-rape.*(Aphyllon ludovicianum Gray.)*

Banks of Wabash River, near brick yards above Terre Haute; frequent locally in 1889-90. Parasitic on the roots of the Great Horse-weed, *Ambrosia trifida* L. Added to the State flora by W. S. Blatchley.

CONOPHOLIS Wallr.

C. AMERICANA (L. f.) Wallr. Squaw-root.

Not uncommon in many parts of the State, being found in rich woods. It is more frequently associated with oaks in our area than with any other genus.

Flowers April to August.

Tippecanoe (Cunningham); Clark (Barnes); St. Joseph (Rothert); Putnam (MacDougal); Fayette (Hessler); Monroe and Vigo (Blatchley); Hamilton (Wilson); Steuben (Bradner); Jefferson.

LEPTAMNIUM Raf.

L. VIRGINIANUM (L.) Raf. Beech-drops.*(Epiphegus Virginiana L.)*

Found in beech woods throughout the State. More abundant in dense woods. As the mass distribution of the beeches is in the southern part of the State, the species is there more abundant.

Flowering in August and September.

Jefferson and Laporte (Barnes); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

BIGNONIACEÆ. Trumpet-creeper Family.

BIGNONIA L.

B. CRUCIGERA L. Tendrilled Trumpet-flower.*(B. capreolata L.)*

In moist woods in southwestern Indiana.

Flowers from April until June.

TECOMA Juss.

T. RADICANS (L.) DC. Trumpet-flower. Trumpet-creeper.

In all parts of the State, in especial abundance and development southward. It grows either in moist, rich, alluvial soils or in sandy soils, being found as a constituent of the flora of the Basswood dunes. When brought in cultivation it multiplies with extreme rapidity. One of the most attractive of our climbing plants.

Flowers from June until August.

Cass (Hessler); Daviess (Clements); Dearborn (Collins); Putnam (MacDougal); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Decatur and Shelby (Ballard); Lake and Porter (Cowles); Vigo (Blatchley); Hamilton and Marion (Wilson).

CATALPA Scop.

C. CATALPA (L.) Karst. Catalpa. Indian Bean.

(*C. bignonioides* Walt.)

This southern form has escaped from cultivation in the southern counties of the State and is there well established. The wood is light and weak, but very durable in contact with the soil, making it valuable for posts.

Flowers in June and July.

Jefferson (Barnes); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck).

C. SPECIOSA Warder. Catalpa. Larger Indian Bean.

This is the species under cultivation in most parts of the State, being largely used for ornamental and shade purposes. It has escaped to a greater or less extent in almost every section in which it has been largely cultivated. In some counties "catalpa groves" have established themselves in rather damp, rich soils. The wood is somewhat lighter in weight than in the preceding species, but equally durable in contact with the soil. The rapidity of growth of the catalpa suggests as suitable for planting for "posts" and other purposes in which durability in contact with the soil is desired.

Flowers in May and June.

Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Tippecanoe (Coulter).

MARTYNIACEÆ. Unicorn-plant Family.**MARTYNIA L.****M LOUISIANA Mill. Unicorn-plant. Elephant's Trunk.**

(*M. proboscidea* Glox.)

This interesting plant, said to be of carnivorous habit, is confined to the southern counties of the State. It is found rather sparingly in rich, loose sandy soil usually along the banks of streams.

Flowers in August and September.

Jefferson (Barnes); Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Vigo (Blatchley).

ACANTHACEÆ. Acanthus Family.**RUELLIA L.****R. STREPENS L. Smooth Ruellia.**

Indicative of rich soil, growing in moist shaded places. Well distributed throughout the State.

Flowers from May until July.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Fayette and Cass (Hessler); Putnam (MacDougal); Decatur (Ballard); Hamilton and Marion (Wilson); Vigo (Blatchley).

R. CILIOSA Pursh. Hairy Ruellia.

Found throughout the State in dry, sandy soil. More abundant than the preceding species.

Flowers from June through September.

Tippecanoe (Cunningham); Cass (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

DIANTHERA L.**D. AMERICANA L. Dense flowered Water Willow.**

Growing in shallow water at the edges of sandbars, or low banks of streams or at the margin of pools. Prefers a sandy soil. Abundant.

Flowers from May through August.

Tippecanoe (Cunningham); Jennings (Barnes); Jefferson (Coulter); Decatur and Shelby (Ballard); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson).

PHRYMACEÆ. Lopseed Family.**PHRYMA L.****P. LEPTOSTACHYA L. Lopseed.**

Common in many parts of the State in moist, dense woods and thickets. Easily recognized by the calyx being abruptly reflexed against the spike after flowering.

Flowers from late in June through August.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (J. M. Coulter); Putnam (MacDougal); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

PLANTAGINACEÆ. Plantain Family.**PLANTAGO L.****P. MAJOR L. Common or Greater Plantain.**

Abundant throughout the State in waste places, frequently becoming an annoying weed in lawns and along brick walks. Very variable in leaf and spike. Commonly confused with the next species, which is perhaps the prevailing form in the northern counties.

Flowers from May until September.

Putnam (MacDougal); Dearborn (Collins); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meynecke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

P. RUGELII Decaisne. Rugel's Plantain.

Not separated as a rule from the preceding, although found in almost every collection from a northern county. The two species intergrade almost perfectly as to leaf and spike characters. They may, however, be readily separated by the size and number of the seeds. In *P. major* the capsule contains from eight to sixteen seeds, in *P. Rugelii* from four to nine, the seeds of the latter species being much the larger. The plants are found associated and have similar flowering seasons.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo (Blatchley).

P. LANCEOLATA L. Ribwort. Rib-grass. English Plantain.

Indicative of coarse, rather gravelly dry soils. Found throughout the State at borders of fields, in waste places and along railways. In some localities becoming an annoying weed.

Flowers from April until the heaviest frosts.

Tippecanoe (Cunningham); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Noble (Van Gorder); Franklin (Meyneke); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

P. SPARSIFLORA Michx. Southern Plantain

Reported only from southern part of the State. I would be inclined to regard it as a depauperate form of *P. major* had it not been for the two-seeded pyxis. Reported also in southern Illinois.

Clark (Baird and Taylor).

P. CORDATA Lam. Water Plantain. Heart-leaved Plantain.

Of more common occurrence in State than reports would indicate. In marshes and along low banks of rather sluggish streams.

Flowers from March through July.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Kosciusko (Coulter).

P. ARISTATA Michx. Large-bracted Plantain.

(*P. Patagonica aristata* Gray.)

Not abundant, but found in several counties in dry, coarse soils, chiefly along railway embankments and roadsides.

Flowers from May until the frosts.

Vigo (Blatchley); Clark (Baird and Taylor); Dearborn (Collins); Hamilton (Wilson); Cass (Hessler).

P. VIRGINICA L. Dwarf or White Plantain.

Common in many parts of the State in dry soil in waste places. Flowers from the middle of March through June.

Tippecanoe (Cunningham); Clark (Barnes); Monroe and Vigo (Blatchley); Jefferson (J. M. Coulter); Franklin (Meyneke); Gibson and Posey (Schneck); Knox (Spillman); Fayette (Hessler).

P. ELONGATA Pursh. Slender Plantain.*(P. pusilla Nutt.)*

Reported only from Gibson County by Dr. Schneck as rare in dry, sandy soil.

Collected in flower in May.

Gibson (Schneck).

RUBIACEÆ. Madder Family.**HOUSTONIA L.****H. CÆRULEA L. Bluets. Innocence.**

Very abundant in the southern part of the State in grassy places and on damp rocks. It extends north in the State as far as Lake County. It is found in great profusion in favorable stations and is one of the prettiest of our spring forms.

Flowers from early in April until in July.

Cass (Hessler); Monroe and Putnam (MacDougal); Jefferson (Barnes); Clark (Baird and Taylor); Franklin (Meyneke); Dearborn (Collins); Vigo and Lake (Blatchley).

H. PURPUREA L. Large Houstonia.

Abundant in open places, especially sandy soils about lakes and in dry woods and thickets.

Flowers from April through June.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe (Blatchley); Gibson and Posey (Schneck); Putnam (MacDougal); Kosciusko (Coulter); Cass (Hessler); Marion (Wilson).

H. CILIOLATA Torr. Fringed Houstonia.

Confined to rocky hillsides in the southern part of the State and to sandy shores in the northern counties. Not especially abundant.

Flowers from May through July.

Jefferson (Barnes); Clark (Baird and Taylor); St. Joseph (Rothert); Vigo (Blatchley); Floyd (Barnes); Tippecanoe.

H. LONGIFOLIA Gaertn. Long-leaved Houstonia.*(H. purpurea longifolia Gray.)*

In central and eastern counties rather sparingly. In low grounds, usually in dry, sandy soil.

Flowers from May through September.

Monroe (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler).

CEPHALANTHUS L.

C. OCCIDENTALIS L. Button-Bush. Globe-flower.

An abundant shrub in all parts of the State, growing in marshes or low, wet ground. About some of the inland lakes it takes on an arborescent habit, reaching a height of 20 feet. A handsome and easily recognized species, well adapted for ornamental purposes where mass effects are desired.

Flowers from June through September.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Putnam (MacDougal); Noble (Van Gorder); Shriner Lake (Deam); Hamilton and Marion (Wilson); Steuben (Bradner); Cass and Fayette (Hessler).

MITCHELLA L.

M. REPENS L. Partridge-berry. Twin-berry.

In woods usually associated with various mosses. A delicate trailing plant, quite abundant in the southern counties, but becoming scarce in the central and northern parts of the State.

Flowers from April until late in June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Noble (Van Gorder); Putnam (MacDougal); Steuben (Bradner).

SPERMACOCE L.

S. GLABRA Michx. Smooth Button-weed.

Confined to the southern counties of the State, where it grows in very wet soil, chiefly along the banks of streams.

Flowering in July and August.

Daviess (Clements); Jefferson (Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck).

DIODIA L.

D. TERES Walt. Rough Button-weed.

In dry, sandy soil only in the extreme southern part of the State.

Flowering late in July and in August.

Gibson and Posey (Schneck); Crawford (Blatchley).

GALIMUM L.

G. APARINE L. Cleavers. Catch-weed.

Abundant throughout the State in low, damp grounds, or in damp woods and ravines. In favorable locations makes its way over the plants of a wide area. Its greatest development is in rich alluvial soils at borders of marshes.

Flowers from May until September.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Decatur (Ballard); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Gibson and Posey (Schneck); Putnam (MacDougal); Kosciusko (Coulter); Knox (Spillman); St. Joseph (Rothert); Hamilton and Marion (Wilson).

G. PILOSUM Ait. Hairy Bedstraw.

Found chiefly in the northern counties of the State in sand soils in dry locations. Only a single report from the south part of the State.

Flowers in July and August.

Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Lake; Steuben (Bradner).

G. LANCEOLATUM Torr.

Of sparing occurrence in the State. Confined to central and northern counties. Found growing in dry woods in loose, sandy soil.

Flowers in July and August.

Putnam (MacDougal); Noble (Van Gorder).

G. CIRCÆZANS Michx. Wild Liquorice.

One of our most abundant forms, growing in rich soils, usually in woods or thickets. Found throughout the State.

Flowers in June and July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyneke); Putnam (MacDougal); Tippecanoe (Cunningham); Vermillion (Wright); Hamilton and Marion (Wilson); Steuben (Bradner).

G. BOREALE L. Northern Bedstraw.

Found in the northern counties of the State in marshes and wet places and on limestone ledges. In this latter situation the species extends as far south as Decatur County.

Flowers from June through August.

Kosciusko (Chipman); Cass and Marshall (Hessler); Noble (Van Gorder); Lake (Hill); St. Joseph (Rothert); Decatur (Ballard); Wabash (Jenkins).

G. TRIFLORUM Michx. Sweet-scented Bedstraw.

Abundant, especially in the northern counties in rather dry woods and thickets. Much less common in the southern counties.

Flowers from late in May until August.

Fayette and Cass (Hessler); Franklin (Meyneke); Jefferson (J. M. Coulter); Marion, Monroe, and Vigo (Blatchley); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Steuben (Bradner).

G. TINCTORIUM L. Marsh Bedstraw.

(*G. trifidum latifolium* Torr)

In damp places, such as marshes, dense woods or low grounds in rich soil. Quite common in all parts of the State, often being thrown with *trifidum* in collections.

Flowers from May until August.

Jefferson (Barnes); Noble (Van Gorder); Gibson and Posey (Schneck); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Putnam (MacDougal); Vermillion (Wright); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley).

G. TRIFIDUM L. Small Bedstraw. Small Cleavers.

The most widely distributed species of the genus, with perhaps the exception of *G. Aparine*. In bogs, low grounds and dense woods throughout the State.

Flowers from May until late in July.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Vermillion (Wright); Kosciusko (Coulter); Daviess (Clements); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

G. CONCINNUM Torr. and Gray. Shining Bedstraw.

Frequent in dry, rocky or open woods in many parts of the State. Abundant wherever found.

Flowering in June and July.

Tippecanoe (Hussey); Fayette (Hessler); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Vermillion (Wright); Decatur (Ballard); Jefferson (Barnes).

G. ASPRELLUM Michx.

Confined to northern counties, where it is found in moist, sand soils.

Flowers in July and August.

Kosciusko (Coulter); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Marion; Hamilton (Wilson); Steuben (Bradner).

CAPRIFOLIACEÆ. Honeysuckle Family.**SAMBUCUS L.****S. CANADENSIS L.**

Abundant throughout the State in various situations. While common along roadsides and in open, waste places, it reaches its best development in moist, rich, alluvial soils. Flowers very fragrant and berries much used in wine making.

Flowers from May through August, often flowering twice in a season.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (J. M. Coulter); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Vermillion (Wright); Monroe and Vigo (Blatchley); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

S. PUBENS Michx. Red-berried Elder.

(*S. racemosa* Hook.)

Chiefly northern in its range in our boundaries. It is found associated with *S. Canadensis* and also in coarse, rocky soils. The pith forms a satisfactory means of recognition, being brown in this species and white in the preceding.

Flowers in May and June.

Putnam (MacDougal); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Noble (Van Gorder); Laporte and Porter (Hill); Kosciusko (Coulter); Steuben (Bradner).

VIBURNUM L.

V. OPULUS L. Cranberry-tree. High Bush-cranberry.

Sparingly found in a few widely separated counties, in low grounds, usually in rather sandy loam soils.

Flowering season, June and July.

Noble (Van Gorder); Jefferson and Tippecanoe (Hussey); Kosciusko (Chipman); Steuben (Bradner).

V. ACERIFOLIUM L. Maple-leaved Viburnum.

Found in all parts of the State in rather dry soil in clearings and rich woods. A rather handsome, branching shrub.

Flowering season, May and June.

Bartholomew and Jennings (Barnes); Tippecanoe (Hussey); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougall); Cass (Hessler); St. Joseph (Rothert); Hamilton (Wilson); Steuben (Bradner); Lake (Hill).

V. PUBESCENS (Ait.) Pursh. Downy-leaved Arrow-wood.

In central and eastern counties of the State, in rough, rocky woods and hillsides. Not at all abundant.

Collected in flower July 7.

- Putnam (MacDougall); Jay, Delaware, Randolph, and Wayne (Phinney); Steuben (Bradner); Lake and Jefferson.

V. DENTATUM L. Arrow-wood.

In marshy thickets and damp, dense woods, chiefly in central and southern counties. Not reported from north of Tippecanoe County. Usually plentiful in the stations in which it occurs.

Flowers late in May and in June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Tippecanoe.

V. MOLLE Michx. Soft-leaved Arrow-wood.

This species, although assigned a range far to the east of Indiana, undoubtedly belongs to our flora. It is confined to the southern counties, growing at the margins of dry, upland prairies.

Collected in flower in June.

Vigo (Blatchley); Jefferson (J. M. Coulter).

V. LENTAGO L. Nanny-berry. Sheep-berry.

In rich soil in open woods and by the borders of streams in the central and southern counties. A large shrub, often becoming tree-like in habit. The fruit, which ripens in October, is edible.

Flowering season, May and early June.

Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Putnam (MacDougal); Kosciusko (Coulter); Marion; Steuben (Bradner).

V. PRUNIFOLIUM L. Black Haw. Sloe. Stag-bush.

Throughout the State in fair abundance, growing in dry fields and on wooded slopes. In some localities it occurs as a small tree. The wood is hard, reddish-brown in color and occasionally used in making the handles of small tools. The fruit, which ripens in September, is sweet and edible.

Flowers in May and June.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner); Fayette (Hessler).

TRIOSTEUM L.**T. PERFOLIATUM L. Fever-wort. Horse Gentian.**

Abundant throughout the State in rich soils, growing profusely in clearings and open woods. Intergrades with the next species, the two being very difficult to disentangle.

Flowers from April through June.

Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Kosciusko (Coulter); Cass and Fayette (Hessler); Hamilton (Wilson); Steuben (Bradner); Marion.

T. ANGUSTIFOLIUM L. Narrow-leaved Horse Gentian.

In similar soils and of similar distribution as the preceding. Much less common.

Flowers in May and June.

Cass (Hessler); Daviess (Clements); Franklin (Meyneke); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

LINNÆA L.

L. BOREALIS L. Twin-flower. Ground Vine.

Growing in moist, pine woods, Pine Station. Collected June 7, 1884. This is the most southern station recorded for this definitely northern form. Detected as a member of the State flora by Rev. E. J. Hill.

Lake (Hill).

SYMPHORICARPOS Juss.

S. RACEMOSUS Michx. Snowberry.

In a few southern counties in rocky places, occasionally along the banks of streams. The species does not seem to be an "escape" in the localities in which it is found, but is evidently a member of the native flora.

Flowers in June and July.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Franklin (Meyneke); Steuben (Bradner).

S. OCCIDENTALIS Hook. Wolfberry.

I have seen a herbarium specimen of this species labelled Indiana, but without collector's name or data of any sort. Admitted upon the specimen.

Marion.

S. SYMPHORICARPOS (L.) MacM. Coral-berry. Indian Currant.

(*S. vulgaris* Michx.)

Not uncommon in various parts of the State. It is usually found in coarse, rocky or gravelly soils in either wet or dry situations.

Flowers in July.

Jefferson (J. M. Coulter); Putnam (MacDougal); Franklin (Meyneke); Gibson and Posey (Schneck); Noble (Van Gorder); Marion, Monroe and Vigo (Blatchley).

LONICERA L.

L. HIRSUTA Eaton. Hairy Honeysuckle.

In damp copses and on rocks.

Flowers from June until July.

Steuben (Bradner).

L. DIOICA L. Smooth or Glaucous Honeysuckle.*(L. glauca Hill.)*

Not abundant in any part of the State, but found in several counties. Its greatest abundance is in the southern counties in rocky, hill regions. It is more sparingly found in the extreme northern counties in dry, sandy soil.

Flowering season, May and June.

Clark (Barnes); Noble (Van Gorder); Monroe (Blatchley); Lake and Tippecanoe.

L. SULLIVANTII Gray.

Reported from a single county in the State as growing in dry woodlands. I have seen no specimen, but the reference seems sufficiently definite to admit the form to the flora.

Randolph (Phinney).

L. SEMPERVIRENS L. Trumpet or Coral Honeysuckle.

On hillsides and in rather damp ground in several southern counties in considerable abundance. Not reported as occurring north of Wayne County. The species is largely cultivated and is one of our most ornamental climbing plants.

Flowers from April through the summer.

Jefferson (J. M. Coulter); Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyneke).

DIERVILLA Moench.**D. DIERVILLA (L.) MacM. Bush Honeysuckle.***(D. trifida Moench.)*

In the northern counties in dry, rocky woodlands.

Flowers from June until July.

Steuben (Bradner; Lake.

VALERIANACEÆ. Valerian Family.**VALERIANA L. Valerian.****V. PAUCIFLORA Michx.**

Apparently confined to the southern half of the State, becoming rarer as it reaches its northern limit. Its favorite home is in rich ravines or upon steep hillsides.

Flowers in May and June.

Reported from Jefferson, Clark, Gibson, Posey, Monroe, Franklin, Fayette, and Putnam counties; Hamilton and Marion (Wilson).

V. EDULIS Nutt.

Reported only from Cass County by Dr. Hessler. An examination of the specimens leaves no doubt of the accuracy of the reference.

V. SYLVATICA Banks.

Not of general distribution.

Reported from Jefferson County (Coulter); Putnam County (Underwood).

VALERIANELLA Tourn. Corn Salad. Lamb Lettuce.

V. LOCUSTA (L.) Bettke.

(*V. olitoria* Poll.)

Waste grounds in Jefferson County (Barnes).

V. CHENOPODIFOLIA (Pursh) DC. Goosefoot Corn Salad.

In moist, rather rich soils in the central and southern part of the State.

Flowers in May and June.

Hamilton and Marion (Wilson).

V. RADIATA (L.) DuRoi.

Of more general distribution, but confined in mass distribution to northern and eastern counties.

Reported from Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Fayette (Hessler); Putnam (MacDougal); Decatur (Ballard); Marion.

DIPSACACEÆ. Teasel Family.

DIPSACUS L. Teasel.

D. SYLVESTRIS Huds. Wild Teasel.

The mass distribution is found in the southern counties of the State, where its favorite station is upon barren slopes or along roadsides.

Its flowering period is from July to September.

Reported as follows: Monroe (Blatchley); Fayette (Hessler); Tippecanoe (Cunningham); Jefferson (Coulter); Putnam (MacDougal); Hamilton and Marion (Wilson); Steuben (Bradner).

CUCURBITACEÆ. Gourd Family.

MELOTHRIA L.

M. PENDULA L.

A local form confined so far as reports go to two counties bordering the Ohio River, viz., Clark (Baird and Taylor) and Jefferson (Coulter).

MICRAMPELIS Raf. Wild Balsam Apple.

M. LOBATA (Michx.) Greene.

(*Echinocystis lobata* Torr. and Gray.)

A form of general distribution reported definitely from 17 counties. It is more frequent in the northern counties, as its general range would indicate.

Its flowering season is from July to September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Davies (Clements); Jay, Delaware, Wayne, and Randolph (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Putnam (MacDougal); Vigo and Monroe (Blatchley); Carroll, Marion, Hamilton (Wilson).

SICYOS L. One-seeded Bur-cucumber.

S. ANGULATUS L.

More abundant in the northern and eastern portions of its area in the State.

It flowers from July to September, and finds its best conditions along the banks of streams.

This species, as well as the one preceding, are coming into general cultivation as ornamental climbers.

Reported stations: Kosciusko (Coulter); Jay, Delaware, Wayne, and Randolph (Phinney); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Franklin (Meyncke); Putnam (Underwood); Tippecanoe (Golden); Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton and Marion (Wilson).

CAMPANULACEÆ.

CAMPANULA L. Bellflower.

C. ROTUNDIFOLIA L. Harebell.

Found only in the northern part of the State. The stations reported are Laporte (Barnes); Lake (E. J. Hill); Kosciusko (Chipman); Steuben (Bradner); Cass and Marshall (Hessler).

C. ROTUNDIFOLIA LANGSDORFIANA (A. DC.) Britton.*(C. rotundifolia arctica Lange.)*

This form is also confined to the region about Lake Michigan, with the exception of a station in Cass County.

Reported from Laporte (Barnes); Lake (Hill); Cass (Hessler).

C. APARINOIDES Pursh. Marsh Bellflower.

A somewhat common form in the marsh lands of the northern counties. Its habit of growing in grassy grounds perhaps accounts for the few stations definitely reported.

Tippecanoe (Cunningham); Kosciusko (Coulter); Laporte (Barnes); Lake (Barnes); Marshall (Coulter); Steuben (Bradner).

C. DIVARICATA Michx. Panicked Bellflower.

On rocky banks and hillsides.

Flowers from June until September.

Monroe (Dudley).

C. AMERICANA L. Tall Bellflower.

Generally distributed throughout the State, but reaching its highest development in rich, wet soil. In such regions it frequently reaches a height of 10 feet, with the spicate inflorescence covering from two and one-half to three feet. In dry localities the size is much reduced, the petioles as a rule are without margins and the epidermis is very manifestly thickened.

The flowering season opens in June and continues until in September.

Specimens examined from Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

LEGOUZIA Durand.**L. PERFOLIATA (L.) Britton. Venus's Looking-glass.***(Specularia perfoliata A. DC.)*

In exposed situations in rather poor soil.

The flowering season extends from May through August. The flowers are open in the earlier hours of the day, usually closing between two and three o'clock or on bright, sunny days as early as noon.

Tippecanoe (Cunningham); Jefferson and Kosciusko (Coulter); Daviess (Clements); Knox (Spillman); Hamilton and Marion (Wilson); Cass (Hessler); Vigo and Monroe (Blatchley).

LOBELIA L.

L. CARDINALIS L. Cardinal Flower.

Occasional throughout the State, very common in low grounds in the more northern counties. In the height of its flowering season in August it frequently gives its deep red color to acres of lowlands adjoining the smaller inland lakes. In the deeper shade the flowering extends into September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Round Lake (Deam); Fayette (Hessler); Knox (Spillman); Hamilton and Marion (Wilson); (Steuben (Bradner); Vigo and Monroe (Blatchley).

L. SYPHILITICA L. Great Lobelia.

The most abundant form in the State. While it reaches its maximum development in low, rich soils, it maintains itself well in dry regions, the adaptations apparently being chiefly a reduction in leaf surface. No especial thickening of the epidermis was observed in sections from a large number of specimens.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Vermillion (Wright); Knox (Spillman); Decatur (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner); Vigo and Monroe (Blatchley).

Flowering season, August and September.

L. PUBERULA Michx.

Usually found in moist, light soil, flowering in July and August. It is fairly distributed throughout the State in all probability, but definite reports have been received from but few counties.

Kosciusko (Coulter); Daviess (Clements); Tippecanoe (Hussey); Jefferson (Barnes); Hamilton and Marion (Wilson); Monroe and Carroll.

L. SPICATA Lam.

Confined to the northern counties, where it usually occurs in gravelly soil.

Flowers late in July and August. Forms in dry soil flower from one to two weeks earlier than those in low, wet grounds.

Reported from Tippecanoe (Cunningham); Cass (Hessler); St. Joseph (Barnes); Lake (Hill); Kosciusko (Coulter); Laporte (Coulter); Jefferson and Monroe.

L. LEPTOSTACHYS A. DC.

Of practically the same range as the last. It is perhaps more limited in its soil range, being confined so far as my observations go to sandy soils, while *L. spicata* grows vigorously in a clayey loam.

L. INFLATA L. Indian Tobacco.

Found throughout the State in dry, sunny regions. The plant is used somewhat largely in quack remedies, but the plant is poisonous and such decoctions should be rigidly avoided.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner); Vigo and Monroe (Blatchley).

It flowers from July to September, its more apparent mass distribution being in the southeastern counties.

L. KALMII L.

A form confined to wet soils in the northern counties of the State. It is distinguished from *L. Nuttallii* by having the bracts above the middle of the pedicel, while in the latter form they are at the base. In the early flowering season the pedicels are quite short, and bracted near the base; later in the season the pedicels are much longer and the bracts above the middle. *L. Nuttallii* is probably not a member of the State flora, and several references to that form are included under this citation.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Noble (Van Gorder); Lagrange (Barnes); Steuben (Bradner).

CICHORIACEÆ. Chicory Family.**CICHORIUM L.****C. INTYBUS L. Chicory.**

Found in waste places and by roadsides throughout the State. The plant was largely cultivated during the Civil War, its root being used as a substitute for coffee. Whether its distribution, which is becoming more general, represents escaped forms can not now be determined. It collects in patches and is very persistent.

Flowers in July and August.

Noble (Van Gorder); Jefferson (Coulter); Wabash (Jenkins); Kosciusko (Coulter); Steuben (Bradner); Marion.

ADOPOGON Neck.

A. VIRGINICUM (L.) Kuntze. Virginia Goatsbeard.

(Krigia amplexicaulis Nutt.)

Common throughout the State in moist woods and opens, thriving best in fairly rich, loam soil.

Flowers from May through July.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Knox (Spillman); St. Joseph (Rothert); Fayette (Hessler); Steuben (Bradner).

A. DANDELION (L.) Kuntze. Dwarf Dandelion.

(Krigia Dandelion Nutt.)

Confined to the southern counties of the State, growing in moist, rather thin soils.

Flowering season, from April until late in June.

Jefferson and Floyd (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Hamilton (Wilson).

A. CAROLINIANUM (Walt.) Britton.

(Krigia Virginia Willd.)

In dry, sandy soil, confined to the extreme northern counties of the State. An abundant beach plant near Michigan City.

Flowers from late in April through August.

Laporte (Barnes); Lake.

TRAGOPOGON L.

T. PRATENSIS L. Yellow Goatsbeard.

Reported from a single county as occurring along railroads. Evidently a migrant from the east. Detected by Dr. Robert Hessler and verified by herbarium specimens.

Marion (Hessler).

TARAXACUM Hall.

T. TARAXACUM (L.) Karst. Dandelion.

(T. officinale Weber.)

Well known throughout the State, though only becoming annoying when it invades lawns. Its roots are still somewhat used as an adulterant of coffee, and its young leaves as greens.

It blooms practically throughout the entire year in favorable situations. Mr. E. A. Schultze reported specimens in flower and

fruit January 1, 1899, at Fort Wayne. The plants had apparently blossomed under the snow and had fruited so abundantly that the surrounding grass was whitened with the pappus. An examination of specimens showed the achenes to be fully viable.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Putnam (MacDougal); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); St. Joseph (Rothert); Decatur and Shelby (Ballard); Wabash (Jenkins); Allen (Schultze); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

SONCHUS L.

S. OLERACEUS L. Sow-thistle.

Abundant in fields and waste places except in the extreme northern part of the State. The very early leaves are somewhat used for greens.

Flowers from May until the heavy frosts.

Tippecanoe (Cunningham; Vigo (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Putnam (MacDougal); Fayette (Hessler); Marion; Steuben (Bradner); Gibson.

S. ASPER (L.) All. Spiny Sow-thistle.

In similar localities as the preceding and of much the same distribution. Both species are common but not troublesome weeds.

Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Fayette (Hessler); Marion; Monroe; Hamilton (Wilson); Steuben (Bradner)

LACTUCA L.

L. SCARIOLA L. Prickly Lettuce.

This species attracted attention a few years ago because of its very rapid spread in waste places and its consequent invasion of cultivated areas. The careful study of the plant published by Dr. Arthur, of the Purdue Experiment Station, precludes the necessity of any fuller discussion of the plant in this place. In many districts, especially where sheep are kept, it is not considered a very troublesome weed, the sheep and other stock readily eating the young leaves. It is now of wide distribution, and

vigorous measures should be taken to prevent its further spread.

It flowers usually in August and September, occasionally continuing to flower until late in October.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass and Fayette (Hessler); Noble (Van Gorder); Putnam (Underwood); Wabash (Jenkins); Hamilton and Marion (Wilson).

L. CANADENSIS L. Wild Lettuce.

Very abundant in almost every part of the State, ordinarily in moist soil. Found in the edges of cultivated fields, by roadsides and in almost any situation where the soil has been recently broken. An annoying weed in many counties.

Flowers from July until October.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Jefferson (Barnes); Putnam (MacDougal); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyneke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Decatur and Shelby (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

L. HIRSUTA Muhl. Hairy Wood Lettuce.

Found only in the southern counties of the State in dry soil. Not abundant. Stem and peduncles very often red or purple.

Flowers in July and August.

Vigo (Blatchley); Gibson and Posey (Schneck); Clark (Baird and Taylor).

L. SAGITTIFOLIA Ell. Arrow-leaved Lettuce.

(*L. integrifolia* Bigel.)

In many counties in dry, open rather sandy soil in fair abundance. More abundant in the southern than in the northern counties.

Flowers from July until September.

Noble (Van Gorder); Franklin (Meyneke); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Putnam (MacDougal); Fayette (Hessler).

L. PULCHELLA (Pursh) DC. Large Blue-flowered Lettuce.

Evidently a migrant. Reported from a single station in the State by Dr. MacDougal. Found in moist soil along the right of way of a railroad.

Collected in flower in August.

Putnam (MacDougal).

L. VILLOSA Jacq. Hairy-veined Blue Lettuce.

(*L. acuminata* Gray.)

In several counties of the State in moist thickets and along streams. Nowhere abundant.

Flowers from July through September.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Putnam (MacDougal); Cedar Lake (Deam).

L. FLORIDANA (L.) Gaertn. False Lettuce.

Reported only from the southern counties of the State in moist, open places. Not abundant in any of its stations.

Flowering season, July to September.

Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Franklin (Meyncke).

L. SPICATA (Lam.) Hitchk. Fall Blue Lettuce.

(*L. leucophæa* Gray.)

Not abundant but found in several counties, chiefly southern, in damp, rather rich soils. Not reported as occurring north of Kosciusko County.

Flowers from July through September.

Kosciusko (Coulter); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Fayette (Hessler); Monroe and Vigo (Blatchley); Steuben (Bradner).

HIERACIUM L.**H. VENOSUM L. Rattlesnake-weed. Poor Robin's Plantain.**

In the southern counties of the State in dry, shaded places. Not reported as occurring north of Monroe County.

Flowers from late in June through September.

Jefferson and Clark (Barnes); Monroe (Blatchley).

H. CANADENSE Michx. Canadian Hawkweed.

This form of northern mass distribution is found only in the extreme northern counties of the State. First collected by Rev. E. J. Hill.

Flowering season, August and September.

Lake (Hill); Steuben (Bradner).

H. PANICULATUM L. Panicked Hawkweed.

In central and southern counties in dry woods or thickets in relative abundance.

Flowers from July until in September.

Johnson and Floyd (Barnes); Monroe (Blatchley); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Putnam (MacDougal).

H. SCABRUM Michx. Rough Hawkweed.

Abundant in many parts of the State. Indicative of dry soil, usually occurring in thickets or recent clearings.

Flowers from July through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Harrison (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Noble (Van Gorder); Jefferson (J. M. Coulter); Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Round Lake (Deam); Fayette (Hessler); Steuben (Bradner).

H. GRONOVII L. Hairy Hawkweed

Not uncommon in several counties, and probably of general occurrence. Found in dry soil in open woods or thickets.

Flowers from July through September.

Kosciusko (Coulter); Harrison and Floyd (Barnes); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Carroll; Steuben (Bradner); Lake (Hill); Tippecanoe; Vigo (Blatchley).

H. LONGIPILUM Torr. Long-bearded Hawkweed.

Reported only from the southwestern counties of the State, occurring in open places and dry woods.

Collected in flower in August.

Gibson and Posey (Schneck); Steuben (Bradner); Vigo (Batchley).

NABALUS Cass.**N. ALTISSIMUS (L.) Hook. Tall White Lettuce.**

(*Prenanthes altissima* L.)

Common in many parts of the State in relatively shaded places. Most abundant in damp, rich soils. In greatest abundance in southern counties of the State.

Flowers from late in July until October.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Monroe and Vigo (Blatchley); Noble (Van Gorder); Clark (Baird and Taylor); Gibson and Posey (Schneck); Wabash (Jenkins); Putnam (MacDougal); Fayette (Hessler); Steuben (Bradner).

N. ALBUS (L.) Hook. Rattlesnake Root. White Lettuce.*(Prenanthes alba L.)*

Difficult to separate from the preceding, both species being very variable and intergrading. In woods and thickets in many parts of the State.

Flowers from August through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Marion; Monroe; Steuben (Bradner).

N. ASPER (Michx.) T. and G. Rough White Lettuce.*(Prenanthes aspera Michx.)*

Reported chiefly from the southern counties, where it occurs in dry, open places. Not abundant in any station.

Flowers from August through September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Steuben (Bradner).

N. RACEMOSUS (Michx.) DC. Glaucous White Lettuce.*(Prenanthes racemosa Michx.)*

Reported only from the northern part of the State, not being reported as occurring south of Cass County. Rather abundant in stations in which it occurs, which are usually moist, open places.

Flowering in August and September.

Cass (Hessler); Noble (Van Gorder); Lake (Hill); Wabash (Jenkins); Steuben (Bradner).

N. CREPIDINEUS (Michx.) DC. Corymbed Rattlesnake Root.*(Prenanthes crepidinea Michx.)*

Not uncommon in widely separated counties, usually growing in fields and thickets in rather dry localities. It is absent from the extreme northern counties, and is found most plentifully in its southern stations.

Flowers later than the other members of the genus, rarely before September, and continuing through October.

Clark (Baird and Taylor); Franklin (Meyneke); Jefferson (J. M. Coulter); Tippecanoe (Conner and Laben); Fayette (Hessler); Wabash (Jenkins).

AMBROSIACEÆ. Ragweed Family.**AMBROSIA L.****A. BIDENTATA Michx. Lance-leaved Ragweed.**

Found only in the central and southern counties of the State. Found in open places, either prairies or clearings. Prefers a rich, loose soil.

Flowers in August and September.

Vigo and Clay (Blatchley); Gibson and Posey (Schneck); Putnam (MacDougal).

A. TRIFIDA L. Great Ragweed Horse-weed.

Abundant and widely distributed in all parts of the State. The species reaches its highest development both as to numbers and size in rich, alluvial soils subject to overflow. It also invades cultivated fields and along their borders often forms a dense thicket.

Flowers from July until the frosts.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Kosciusko; Hamilton and Marion (Wilson); Steuben (Bradner).

A. TRIFIDA INTEGRIFOLIA (Muhl.) T. and G.

Associated with the former in certain parts of its range, but much less abundant and less widely distributed. As the preceding, it has a strong vitality, growing up time and again from the stumps left from cutting.

Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Franklin (Meyncke); Vigo (Blatchley); Fayette (Hessler); Hamilton (Wilson).

A. ARTEMISIAEFOLIA L. Ragweed. Wild Tansy.

The most abundant species of the genus in our bounds. It is found in all parts of the State in waste places and cultivated fields. While it frequently takes complete possession of fallow ground and encroaches heavily upon cultivated areas, it is regarded by many farmers as beneficial to the land. I have been unable to get any clear reason for this belief. It is certainly with

us a prevalent if not a pernicious weed. The pollen of the plant is popularly supposed to cause hay fever.

Flowering season, from July through October.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Kosciusko (Coulter); Wabash (Jenkins); Hamilton and Marion (Wilson); Steuben (Bradner).

A. PSILOSTACHYA DC. Western Ragweed.

Reported as a member of the State flora by Dr. Robert Hessler. Abundant herbarium specimens verify the reference. The general distribution of the plant is to the west of our range. It probably entered the State along the line of east and west railroads. It is as yet a local form of no general distribution. Usually in moist soils.

Flowers from July through September.

Marshall and Marion (Hessler).

XANTHIUM L.

X. SPINOSUM L. Spiny Cocklebur. Burweed.

In the southern and central counties of the State, not extending north of Putnam County. Quite abundant in the extreme southern part of the State in waste places and along roadsides.

Flowers from August until November.

Jefferson (Barnes); Putnam (MacDougal); Clark (Baird and Taylor); Franklin (Meyncke).

X. STRUMARIUM L. Cocklebur. Bur-thistle.

In all parts of the State, abundant in alluvial soils and cultivated fields. A very persistent and annoying weed, which seems to increase in numbers with the increase in the tilled area.

Flowers in August and September.

Vigo and Monroe (Blatchley); Fayette (Hessler); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Putnam (MacDougal); Hamilton and Marion (Wilson); Steuben (Bradner).

X. CANADENSE Mill. Hedgehog Burweed.

Sparingly found in the central counties of the State. First collected by Dr. L. M. Underwood near Greencastle. Along the banks of streams or in high, sandy soils.

Collected in flower in September, but probably commencing to bloom in August.

Tippecanoe (Cunningham); Putnam (Underwood); Hamilton and Marion (Wilson); Vigo (Blatchley).

COMPOSITÆ. Thistle Family.**VERNONIA Schreb.****V. NOVEBORACENSIS (L.) Willd. Ironweed.**

Found throughout the State, but especially abundant in the southern counties. It grows in moist bottom lands in great luxuriance, at times reaching a height of 12 feet. It is also found in moderately dry opens and prairies.

Flowers July to September.

Franklin (Meyneke); Gibson and Posey (Schneck); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (J. M. Coulter); Vigo (Blatchley); Decatur (Ballard); Monroe; Lake (Hill).

V. GIGANTEA (Walt.) Britton. Tall Ironweed.

(*V. altissima* Nutt.)

This form was first detected in Tippecanoe County by Messrs. Conner and Laben in 1896. Since that time I have found the species in many collections labelled *V. fasciculata*. I believe it to be of general distribution in the northern part of the State. In a general way the plant has the inflorescence and achene of *Noveboracensis*, the involucreal scales of *fasciculata* and leaves intermediate between the two. It is found most abundantly in moist soils, along streams.

The flowering season begins late in July and continues until late in September. The station in Tippecanoe County cited above is the only one definitely reported. It occurs, however, in collections from White, Wabash, Marshall and Kosciusko.

V. FASCICULATA Michx. Western Ironweed.

This form is of very general distribution throughout the State, in some cases becoming so abundant as to prove very troublesome. It is found especially abundant in upland soils, and often invades pastures and woodlands.

Its flowering season is from July through September.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Franklin (Meyneke); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

ELEPHANTOPUS L.

E. CAROLINIANUS Willd. Elephant's-foot.

Confined to the southern counties of the State. It occurs in dry, rich soil and is nowhere abundant except in Gibson, Crawford and Posey counties.

It flowers in our range in July and August.

Vigo and Crawford (Blatchley); Daviess (Clements); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Clark (Baird and Taylor).

EUPATORIUM L.

E. MACULATUM L. Spotted Joe-Pyeweed.

This species is, as a rule, not distinguished in local collections from *E. purpureum*, with which it is generally associated, and with which it intergrades. It is much less common and of smaller size. Grows in moist soils.

Flowers in August and September.

Hamilton and Marion (Wilson).

E. PURPUREUM L. Joe-Pye or Trumpetweed. Purple Boneset.

Very abundantly distributed, being most abundant in low, wet grounds. In favorable localities, along streams or low lake margins, it reaches a height of from 10 to 15 feet and is the most conspicuous plant feature.

Flowering season, from late in July until the frosts.

Carroll (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Franklin (Meyneke); Gibson and Posey (Schneck); Putnam (MacDougal); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Tippecanoe (Cunningham); Kosciusko (Coulter); Knox (Spillman); Round Lake (Deam); Hamilton and Marion (Wilson); Steuben (Bradner).

E. PURPUREUM FALCATUM (Michx.) Britton.

Probably found associated with the species throughout its range in the State. Definitely reported from Hamilton and Marion counties by Mr. G. W. Wilson. Many varietal forms of equal distinctness might be established, as is this, upon leaf characters, since *purpureum* is one of our most variable species.

E. SEROTINUM Michx. Late-flowering Thoroughwort.

Found chiefly in the southern part of the State, having no reported locality north of Tippecanoe County. Found in various localities, but most abundant in gravelly banks; it is also found in moist woodlands, though not in as great abundance.

Flowers in August and September.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Tippecanoe (Coulter); Daviess (Clements); Steuben (Bradner).

E. HYSSOPIFOLIUM L. Hyssop-leaved Thoroughwort.

In dry fields and fence rows. Reported from but one county. Flowers from August until September.

Tippecanoe.

E. ALTISSIMUM L. Tall Thoroughwort.

Occasional in a few counties of the State, growing in dry, rather coarse soils.

Flowers late in July.

Tippecanoe (Conner and Laben); Dearborn (Collins); Clark (Baird and Taylor); Franklin (Meyncke); Marion (Wilson); Gibson.

E. SESSILIFOLIUM L. Upland or Bastard Boneset.

Usually growing in dry woods, sometimes extending into the opens. In Gibson and Posey it is found growing abundantly in moist soils. Its range is such as to lead to the belief that it is to be found in all parts of the State.

Flowers July to September.

Floyd (Barnes); Tippecanoe (Wright); Putnam (MacDougal); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Cass (Hessler); Johnson (Barnes).

E. PERFOLIATUM L. Common Thoroughwort. Boneset.

Abundant in low, wet grounds throughout the State. It apparently reaches its best development in rich soils. No plant is more generally known and its use as a household remedy is, or has been, so universal as to give it the popular name of "Ague Weed" in many parts of the State.

Flowers from July until the heavier frosts.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Kosciusko (Coulter); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

E. AGERATOIDES L. f. White Snake-root. Milk-sick Weed.

Usually found in rich soil in woods, extending also into the open. Its best development is found, however, in shaded places. In the southwestern counties of the State the specimens are almost without exception pubescent instead of smooth.

Flowers from July until October.

This species is very commonly associated in the popular mind with the occurrence of milk sickness in cattle. There seems no justification for the belief, and the Department of Agriculture does not include it in the list of plants "known or suspected to be" injurious to stock.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette and Cass (Hessler); Daviess (Clements); Noble (Van Gorder); Tippecanoe (Cunningham); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyneke); Gibson and Posey (Schneck); Kosciusko (Coulter); Hamilton and Marion (Wilson).

E. COELESTINUM L. Mist-flower.

Rather abundant in the southern counties of the State, where it is found in rich, open woods. It is the most delicate species of the genus and is coming into somewhat extended use as an ornamental plant.

Flowers from July until in October.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Franklin (Meyneke); Gibson and Posey (Schneck); Marion and Hamilton (Wilson).

WILLUGHBÆA Neck.

W. SCANDENS (L.) Kuntze. Climbing Hemp-weed or Boneset.

(Mikania scandens Willd.)

Abundant in favorable localities throughout the State. It is always found in moist places, making an equally abundant growth either in sandy soil or in the mucky soils bordering lakes. It frequently covers bushes along streams over a very considerable area, in some cases actually smothering the supporting shrubs.

Flowers July to September.

Gibson and Posey (Schneck); Porter (Blatchley).

KUHNIA L.

K. EUPATORIODES L. False Boneset.

Found in dry, usually sandy soil in several counties of the State. The species prefers the open and is rarely found in shaded places. More abundant in southern portion of State.

Flowers in August and September.

Vigo (Blatchley); Putnam (MacDougal); Tippecanoe (Wright); Franklin (Meyneke); Marion and Hamilton (Wilson); Gibson.

LACINARIA Hill.

L. SQUARROSA (L.) Hill. Scaly Blazing Star. Colic-root.

(Liatris squarrosa Willd.)

Reported definitely only from Gibson and Posey counties by Dr. J. Schneck, who reports it as rare. Probably of much wider distribution. It is found with us in dry soil, flowering in July.

L. CYLINDRACEA (Michx.) Kuntze. Cylindric Blazing Star.

(Liatris cylindracea Michx.)

In dry soil, chiefly in open prairies. Not especially abundant in any of its stations.

Flowering in August and September.

St. Joseph (Barnes); Lake (Hill); Gibson and Posey (Schneck).

L. PYCNOSTACHYA (Michx.) Kuntze. Prairie Snake-root.

(Liatris pycnostachya Michx.)

Found in prairies throughout northern part of State, usually growing in moist places. Found also, though less abundantly, in similar situations in southwestern counties.

Flowers from July to September.

St. Joseph and Jasper (Barnes); Gibson and Posey (Schneck); Vigo (Blatchley).

L. SCARIOSA (L.) Hill. Large Button Snake-root.*(Liatris scariosa Willd.)*

Not common in any region but occurring in many counties. It is more commonly found in open places in dry, rocky soil. Is more abundant in north-central and western part of State than elsewhere.

Flowers August to October.

Cass (Hessler); St. Joseph (Barnes); Noble (Van Gorder); Vigo (Blatchley); Gibson and Posey (Schneck); Harrison (Barnes); Steuben (Bradner); Lake (Hill).

L. SPICATA (L.) Kuntze.*(Liatris spicata Willd.)*

In moist prairies or open bottom lands in several counties. It is rarely found in great numbers in any of its stations.

Flowers from August to October.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Vigo (Blatchley); St. Joseph (Barnes); Floyd (Clapp); Noble (Van Gorder); Lake; Steuben (Bradner).

GRINDELIA Willd.**G. SQUARROSA (Pursh) Dunal. Broad-leaved Gum-plant.**

Reported from Cass County by Dr. Robert Hessler and verified by herbarium specimens. It is a southern and western form and is probably a migrant in Indiana.

Flowering in July and perhaps August.

CHRYSOPSIS Nutt.**C. VILLOSA (Pursh) Nutt. Hairy Golden Aster.**

Banks of streams and rather moist prairies in southern counties. Quite abundant in stations in which it is found. The plant is really a dry soil form, but most of its Indiana stations are in moist soils.*

Vigo (Blatchley); Daviess (Clements).

SOLIDAGO L.**S. SQUARROSA Muhl. Ragged Golden Rod.**

In dry, rocky soil in the "barrens" of the Knob region near New Albany, Floyd County. Collected by Dr. A. Clapp in 1837 and not since reported from the State. Specimens of Clapp's collection are in the Purdue herbarium.

*The Vigo County plants grow on dry, sandy banks.—W. S. B.

S. PETIOLARIS Ait. Downy Ragged Golden Rod.

Specimens collected by Baird and Taylor in Clark County have been referred to this species. While the specimens are not entirely satisfactory, there seems no reason to doubt the accuracy of the reference. The plant came into the flora from the southwest.

S. CAESIA L. Blue stemmed Golden Rod. Wreath Golden Rod.

One of our most abundant and widely distributed forms. It is most abundant in rich, moist soils in shaded places, although it is not unusual in rocky banks.

Flowering season begins in August and continues until the heavy frosts.

All forms from Indiana labelled *S. Curtisii* T. and G. are referred to this species. The two are very similar, being, perhaps, mere geographical species, but *Curtisii* is a mountain form ranging well to the east.

Jefferson (Barnes); Tippecanoe (Cunningham); Vigo and Monroe (Blatchley); Fayette (Hessler); Daviess (Clements); Putnam (MacDougal); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Gibson and Posey (Schneck); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

S. FLEXICAULIS L. Broad-leaved Golden Rod.

(*S. latifolia* L.)

A common form, widely distributed. It is usually found in rich soil in moist, shady localities. Very abundant on shaded banks of streams and lakes and in low thickets.

Flowers in September and October.

Tippecanoe (Cunningham); Cass (Hessler); Jefferson (Barnes); Putnam (MacDougal); Vigo (Blatchley); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Tippecanoe (Coulter); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner); Monroe.

S. BICOLOR L. White Golden Rod.

Apparently confined to the central and southern counties. Nowhere abundant.

Flowers September and October.

Jefferson (Barnes); Monroe (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Scott (Barnes); Tippecanoe (Cunningham); Putnam (MacDougal); Allen.

S. STRICTA Ait. Willow-leaf Golden Rod.

Confined to the northern parts of the State, growing in wet, sandy soil.

Flowering in September and October.

Tippecanoe (Hussey); St. Joseph (Barnes); Noble (Van Gorder); Steuben (Bradner); Lake (Hill).

S. ULIGINOSA Nutt. Bog Golden Rod.

Not reported except from the swamp regions of the northern counties. In some of its stations it is fairly abundant, but as a rule is not found in large numbers.

Flowers in September and October.

In Lake County it is found in peat bogs.

Lake (Hill); Noble (Van Gorder); Cass (Hessler); St. Joseph (Barnes); Wabash (Jenkins).

S. SPECIOSA Nutt. Showy Golden Rod.

A tall, showy form, not infrequent in rich soils near the border of prairies. It is probably to be found throughout the State, although definitely reported from but few counties.

Vigo (Blatchley); Dearborn (Collins); Cass (Hessler); Tippecanoe (Ives); Hamilton and Marion (Wilson); Steuben (Bradner).

S. RIGIDIUSCULA (T. and G.) Porter. Slender Showy Golden Rod.

(*S. speciosa angustata* T. and G.)

In dry soil on prairies or in open lands. Reported only from Vigo County by Mr. W. S. Blatchley. It is probably not generally separated from *S. speciosa*.

S. PURSHII Porter.

(*S. humilis* Pursh.)

In our region this is a sand soil plant. It is recorded from Lake County by Mr. Hill, and as a member of the sand-dune floras of Lake and Porter counties by Dr. Cowles. So far as reports indicate, it is not found other than in connection with the dune flora.

S. VIRGAUREA GILLMANI (Gray) Porter.

(*S. humilis Gillmani* Gray.)

Found in Lake and Porter counties as a member of the flora of the "naked" and "evergreen" dunes. In this region it is quite abundant. Not reported from any other locality.

S. ODORA Ait.

Occasionally found in the southwestern counties of the State. Dr. Schneck reports it as scarce in Gibson and Posey counties, where it grows in sandy soil. Mr. Blatchley reports it as rare on prairies in Vigo County.

Flowers in our area in July and August.

S. RUGOSA Mill. Wrinkle-leaved or Rough-leaved Golden Rod.

A common and variable species growing in dry, open fields or along roadsides. More abundant in the central and southern parts of the State.

Jefferson (Barnes); Monroe (Dudley); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Dearborn (Collins); Franklin (Meyncke); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Cass (Hessler); Lake (Hill); Vigo (Blatchley); Steuben (Bradner).

S. PATULA Muhl. Spreading Golden Rod.

Found in swampy or marsh regions in several counties of the State. Usually abundant in its northern stations, much less so in the central and becoming rare in the southern.

Cass (Hessler); Noble (Van Gorder); Jay, Delaware, Wayne and Randolph (Phinney); Gibson and Posey (Schneck); Steuben (Bradner).

S. ULMIFOLIA Muhl. Elm-leaved Golden Rod.

An abundant form, widely distributed. Usually found in moist, shaded places, though not uncommon in moist fields and prairies. One of our most characteristic forms.

Flowers from July to September.

Jefferson (Barnes); Vigo and Monroe (Blatchley); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Cass (Hessler).

S. NEGLECTA T. and G. Swamp Golden Rod.

Probably of general distribution in swamps and marshes. Definite reports, however, have been received from but few counties.

Flowers in August and September.

Jefferson (J. M. Coulter); Clark (Baird and Taylor).

S. JUNCEA Ait. Sharp-toothed Golden Rod.

Found sparingly in dry, coarse, even rocky soil. Only a few stations have been reported.

The species flowers in June and continues blooming until in September.

Monroe (Blatchley); St. Joseph (Barnes); Jefferson (J. M. Coulter).

S. ARGUTA Ait. Cut-leaved Golden Rod.

Confined largely to the northern part of the State, where it is found in rich soils in shaded situations.

Flowers July to October.

Cass (Hessler); St. Joseph (Barnes); Tippecanoe (Wright); Jefferson, Gibson, and Monroe.

S. RUPESTRIS Raf. Rock Golden Rod.

Reported from Clark County by Baird and Taylor. Found growing on exposed limestone bluffs.

Collected in flower in August.

S. SEROTINA Ait. Late Golden Rod.

Found in moist, rich soil, chiefly in bottom lands. Of most frequent occurrence in the southern counties, not extending north of Jasper.

Flowers late in August and in September.

Jefferson (J. M. Coulter); Jasper (Barnes); Vigo (Blatchley); Noble (Van Gorder); Franklin (Meyncke); Hamilton (Wilson); Marion; Fayette (Hessler).

S. SEROTINA GIGANTEA (Ait.) Gray.

Associated with the former and growing in similar places. Not so widely distributed, according to reports that have come to my hands.

Jefferson (J. M. Coulter); Jasper (Barnes); Franklin (Meyncke); Steuben (Bradner).

S. MISSOURIENSIS Nutt.

Either in dry prairies or in dry and sandy shady places. Fairly abundant in its northern location, rare in its southern.

Flowers very late with us, usually in October, although in open places flowers occasionally open in September.

Jasper (Barnes); Gibson and Posey (Schneck).

S. SHORTII T. and G.

Confined to southern counties, where it grows on exposed cliffs or in rocky soils. Quite abundant at the Falls of the Ohio. Floyd (Dr. Clapp); Clark (Baird and Taylor).

S. CANADENSIS L. Canada Golden Rod.

A very abundant and variable form of wide distribution in the State. It usually indicates dry soil and is very abundant along roadways and in abandoned fields.

Flowers August to November.

Vigo and Monroe (Blatchley); Fayette (Hessler); Daviess (Clements); Jefferson (Barnes); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Kosciusko (Coulter); Putnam (MacDougal); Steuben (Bradner); Cass (Hessler).

S. CANADENSIS SCABRIUSCULA Porter.

Found with the preceding in Vigo County, but not frequent. The station as reported by Mr. W. S. Blatchley is along the Vandalia railroad at Heckland.

S. NEMORALIS Ait. Field Golden Rod.

Well distributed throughout the State in dry soil, usually in the open. In Gibson and Posey counties it is found in moist localities associated with *S. rigida*.

Flowers in August and September.

Vigo (Blatchley); Tippecanoe (Cunningham); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Jefferson (J. M. Coulter); Franklin (Meyncke); Carroll; Gibson and Posey (Schneck); Cass (Hessler); Johnson (Barnes); "Evergreen" dunes, Lake and Porter (Cowles); Steuben (Bradner).

S. RADULA Nutt. Western Rough Golden Rod.

This western species was collected at Lake Maxinkuckee, Marshall County, by Dr. Robert Hessler. So far as I am able to discover it is the only record for the State.

S. RIGIDA L. Stiff or Hard-leaved Golden Rod.

In moist soils in prairies or at their borders. While nowhere abundant, it is reported from a number of counties. It is, perhaps, more abundant in the southern counties. The form is one of the handsomest of our golden rods and is quite variable.

The flowering season is from August to September.

Vigo (Blatchley); Noble (Van Gorder); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Jasper and Harrison (Barnes); Cass (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

S. OHIOENSIS Riddell. Ohio Golden Rod.

Found in moist soils in a few localities, but nowhere abundant. Flowers in August and September.

Clark (Baird and Taylor); Lake (Hill?); Tippecanoe (Coulter).

S. RIDDELLII Frank.

Rather common in wet places in the north-central and northern part of the State. Usually growing in prairies or open places.

Flowers in August and September.

Cass (Hessler); Tippecanoe (Hussey); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Hamilton (Wilson).

EUTHAMIA Nutt.**E. GRAMINIFOLIA (L.) Nutt. Bushy or Fragrant Golden Rod.**

(*Solidago lanceolata* L.)

Widely distributed and abundant in low grounds and marshes.

Flowers from August until October.

Tippecanoe (Cunningham); Cass (Hessler); Jefferson (Barnes); Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Clark (Baird and Taylor); Franklin (Meyneke); Fayette (Hessler); Cedar Lake (Deam); Steuben (Bradner).

E. CAROLINIANA (L.) Greene.

(*Solidago tenuifolia* Pursh.)

Found in shaded places, usually in moist, sandy soil. Much more abundant in the southern part of the State.

Flowers in August and continues until the frosts.

Monroe and Vigo (Blatchley); Cass (Hessler); Jasper (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney).

BRACHYCHÆTA T. and G.

B. SPHACELATA (Raf.) Britton. False Golden Rod.(B. *cordata* Torr. and Gray.)

Among the forms that have come into the flora from the south, the above is one of the most interesting. Its single reported station is at Clifty Falls in Jefferson County. The station abounds in exceptional forms, seeming for some reason to have served as a refuge for plants out of their usual range. The history of the plant is given in full in Proceedings of Indiana Academy of Science for 1895, pp. 189 and 190.

BOLTONIA L'Her.

B. ASTEROIDES (L.) L'Her. Aster-like Boltonia.

In low, open prairies and pastures, in moist, rich soil. Found chiefly in the southern part of the State, but not common in any of its stations.

Flowering season, from August through October.

Vigo (Blatchley); Jefferson (J. M. Coulter); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

SERIOCARPUS Nees.

S. LINIFOLIUS (L.) B. S. P. Narrow-leaved White-topped Aster.(S. *solidagineus* Nees.)

Found in dry, sandy or gravelly soil, and on borders of prairies. Of relatively exceptional occurrence in the State, having been reported from but three counties.

Flowers from August to October.

Floyd (Clapp); Vigo (Blatchley); Kosciusko (Chipman).

ASTER L.

A. DIVARICATUS L. White-wood Aster.(A. *corymbosus* Ait.)

In rather dry soil, usually found in thickets or thin woods. Not of frequent occurrence in the State.

Flowering season, September and October.

Only two localities definitely reported, though I have the form in several unlabelled collections.

Clark (Baird and Taylor); Noble (Van Gorder).

A. MACROPHYLLUS L. Large-leaved Aster.

Found in dry soil, in rather shaded places. Confined to the northern part of the State.

Flowering specimens collected August 8. Season probably extends through September.

Noble (Van Gorder); Round Lake (Deam); Steuben (Bradner).

A. SHORTII Hook.

A very showy aster, with violet-purple rays. In the northern part of the State it is very abundant in dry soil along roadsides and in fence corners. In the southern counties it is not so abundant and is ordinarily found in moist, shaded situations.

Flowers from August until late in October.

Monroe and Vigo (Blatchley); Jefferson (J. M. Coulter); Franklin (Meyncke); Clark (Baird and Taylor); Tippecanoe (Cunningham); Kosciusko (Coulter).

A. AZUREUS Lindl. Azure or Sky-blue Aster.

Open woods, but never abundant. Its range in the State is chiefly central and southern, not extending north of Cass and Tippecanoe.

It flowers from late in August until October.

Jefferson (Barnes); Vigo (Blatchley); Clark (Baird and Taylor); Tippecanoe (Barnes); Gibson and Posey (Schneck); Cass (Hessler).

A. CORDIFOLIUS L. Common Blue Wood Aster.

A very common and widely distributed species. It affects rather dry, coarse soils and is found in light woodlands, thickets and even along fence rows. A certain amount of shade seems necessary for its best development.

Flowering begins in July and continues through October.

Jefferson (Barnes); Tippecanoe (Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Putnam (MacDougal); Noble (Van Gorder); Franklin (Meyncke); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Cass (Hessler); Steuben (Bradner).

A. DRUMMONDII Lindl. Drummond's Aster.

"Low, open pastures and prairies; frequent. Heckland; sides of Vandalia railway." These data are those of Mr. Blatchley, who first recorded the occurrence of this species in the State in his catalogue of the plants of Vigo County. No other station is known within our bounds.

A. SAGITTIFOLIUS Willd. Arrow-leaved Aster.

Common in dry, rich soils, usually found along the borders of fields and thickets. A very variable form.

Flowering season, from August through October.

Monroe and Vigo (Blatchley); Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Daviess (Clements); Kosciusko (Coulter); Steuben (Bradner).

A. UNDULATUS L. Wavy-leaf Aster.

Dry, open woods and thickets. An abundant form widely distributed.

Flowering season, from August until October.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyneke); Putnam (MacDougal); Tippecanoe (Cunningham); Gibson and Posey (Schneck).

A. PATENS Ait. Late Purple Aster.

Found in dry soil in prairies or open ground, but nowhere abundant. Is found, however, in all parts of the State.

Flowers in September and October; occasionally in August in southern counties.

Vigo (Blatchley); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Cunningham); Daviess (Clements).

A. NOVÆ-ANGLIÆ L.

A widely ranging, very beautiful species and also one of most easy recognition. In our area it is found in its best development in wet, rich ground, but it also occurs in scarcely less profusion on dry banks and along roadsides.

Flowering season, from August through October.

St. Joseph (Barnes); Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Tippecanoe (Cunningham); Franklin (Meyneke); Noble (Van Gorder); Jay, Delaware, Ran-

dolph, and Wayne (Phinney); Gibson and Posey (Schneck); Cass (Hessler); Hamilton and Marion (Wilson); Kosciusko (Coulter); Steuben (Bradner).

A. OBLONGIFOLIUS Nutt. Aromatic Aster.

In rich soils or on bluffs. Found in several counties, but abundant in none of its stations.

Flowering season, from August through October.

Jefferson (Barnes); Noble (Van Gorder); Tippecanoe (Conner and Laben); Clark (Baird and Taylor); Gibson and Posey (Schneck).

A. AMETHYSTINUS Nutt. Amethyst Aster.

In moist soil.

Flowers from September until October.

Steuben (Bradner).

A. PUNICEUS L. Purple stemmed Aster.

Found in moist, open woods and along the borders of marshes. In our area indicative of rich soil. An attractive form of easy recognition.

Flowering season, August and September.

Vigo (Blatchley); Fayette (Hessler); Franklin (Meyneke); Jefferson (J. M. Coulter); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson; Steuben (Bradner).

A. PRENANTHOIDES Muhl. Crooked-stemmed Aster.

Sparingly found in several counties, growing in moist, rich soils.

Flowering season, from late in August through October.

Fayette (Hessler); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Tippecanoe (Barnes); Hamilton (Wilson).

A. LÆVIS L. Smooth Aster.

An abundant species in most of the counties in which it occurs. It is usually found in dry soil in prairies or open fields.

Flowering season, September and October, at least in the northern part of its range.

Jefferson and Benton (Barnes); Vigo (Blatchley); Daviess (Clements); Tippecanoe (Conner and Laben); Clark (Baird and Taylor); Cass (Hessler); Lake and Porter on "Evergreen dunes" (Cowles); Steuben (Bradner); Gibson.

A. JUNCEUS Ait. Rush Aster.

Reported, so far as I am able to discover, only from Clark County by Baird and Taylor. The station was a back-water slough, where the plant was found in abundance.

A. NOVI-BELGII L. New York Aster.

A swamp aster of limited distribution in our area. In Clark County it was found at the same station and associated with *A. junceus*.

The species was collected in flower August 3, which is the only fact bearing upon its flowering season.

Clark (Baird and Taylor); Noble (Barnes).

A. LONGIFOLIUS Lam. Long-leaved Aster.

This extreme northern form was collected by Dr. Charles R. Barnes in August, 1878, in Noble County, where it was growing in a peat bog. The herbarium specimens justify the reference, while the number of northern forms found in Noble County affords collateral evidence of the probability of its occurrence. It has not been reported since the above date. A citation of the occurrence of the form in Clark County is doubtless an error.

A. PTARMICOIDES (Nees) T. and G. Upland White Aster.

"Dry sands. Pine Station, Lake County." (E. J. Hill.) This was the only record for the State until 1894, when Messrs. Conner and Laben collected it at Happy Hollow, Tippecanoe County. A comparison of the Tippecanoe plant with the type specimens in the Gray herbarium verifies the original determination. At this station the plant was found on a dry ridge of fine gravel.

A. DUMOSUS L. Bushy Aster.

In dry, sandy or gravelly soil. Frequent along railways and roadsides, rarely found in shaded places.

Flowers in September and October.

Tippecanoe (Young); Monroe and Vigo (Blatchley); Noble (Van Gorder); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

A. SALICIFOLIUS Lam. Willow Aster.

Very common in moist soil in many parts of the State. It is especially abundant on bottom lands subject to an annual overflow, where it occurs associated with *A. paniculatus*.

Flowers in September and October.

Floyd (Clapp); Vigo (Blatchley); Jay, Delaware, Wayne, and Randolph (Phinney); Clark (Baird and Taylor); Putnam (MacDougal); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Steuben (Bradner).

A. PANICULATUS Lam. Panicked White Aster.

Found largely associated with the preceding in similar soils.

Flowers in September and October.

Floyd (Clapp, 1837); Vigo (Blatchley); Clark (Baird and Taylor); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Tippecanoe (Cunningham); Steuben (Bradner).

A. TRADESCANTI L. Michaelmas Daisy.

In low, open places, either wet or dry. In our area the form is more abundant in dry situations. Usually indicative of rich soil.

Flowers in September and October.

Monroe and Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyncke); Tippecanoe (Cunningham); Gibson and Posey (Schneck); Steuben (Bradner).

A. FAXONI Porter.

(*A. polyphyllus* Willd.)

This form, occurring on moist cliffs in New England, New York and Pennsylvania, has obtained a footing in Lake County. Mr. Hill reports it from Whiting as growing in "grassy borders of low thickets" and also at East Chicago.

Flowering specimens were collected September 29, 1892.

A. ERICOIDES L. White Heath Aster. Frost-weed Aster.

Quite abundant in dry soil in open places, a favorite locality being abandoned fields. Rather more abundant in the southern counties.

Flowers from September until after the heaviest frosts.

Jefferson (Barnes); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Franklin (Meyncke); Clark (Baird and Taylor); Kosciusko (Coulter).

A. ERICOIDES PILOSUS (Willd.) Porter.*(A. ericoides villosus T. and G.)*

In similar localities as the preceding and as a rule more frequent. The extreme variability of *A. ericoides* and the complete series of intergrading forms leads to a doubt of the value of the numerous varieties listed under the species. In our area the varietal form given above is more common than the type.

Flowers from September until November.

Jefferson (J. M. Coulter); Franklin (Meyneke); Vigo (Blatchley); Putnam (MacDougal).

A. LATERIFLORUS (L.) Britton. Starved Aster. Calico Aster.*(A. diffusus Ait.)*

Abundant especially in the southern part of the State, not being reported north of Tippecanoe County. It is an extremely variable form, thriving best in dry, clayey soil, in open places. It is also frequently found in upland soils.

Flowers from August through October.

Floyd (Clapp); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Jefferson (Barnes); Tippecanoe (Cunningham); Fayette (Hessler); Vigo (Blatchley); Steuben (Bradner); Marion.

A. VIMINEUS Lam. Small White Aster.

In moist situations in a few counties of the State.

Grows in moist situations, more commonly in sandy or gravelly soil.

Flowers in August and September.

Clark (Baird and Taylor); Franklin (Meyneke); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney).

A. VIMINEUS FOLIOLOSUS (Ait.) Gray.

Found associated with the type form in Franklin County. Reported by Mr. O. M. Meyneke.

A. MULTIFLORUS Ait. Dense-flowered Aster.

Dry, sandy or barren soil in open places. Apparently more abundant in the southern counties of its range.

Flowers from September until in November.

Jefferson (J. M. Coulter); Franklin (Meyneke); Vigo (Blatchley); Clark (Baird and Taylor); Tippecanoe (Barnes).

ERIGERON L.

E. PULCHELLUS Michx. Robin's Plantain.*(E. bellidifolius Muhl.)*

Found on hillsides and banks in rather moist soil. Largely distributed throughout the State, but not especially abundant in any locality.

One of the earliest of the composites in flowering, which begins in April and extends through June.

Tippecanoe (Cunningham); Jefferson (Barnes); Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyneke); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Fayette (Hessler); Steuben (Bradner); Lake (Hill).

E. PHILADELPHICUS L. Philadelphia Fleabane. Daisy Fleabane.

Generally distributed throughout the State and quite an abundant species in the southern counties. The characterization "locally rare" of Britton and Brown is not applicable in our range. It occurs in low, damp grounds in grassy areas.

Flowering season begins in April and continues through the summer.

Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Knox (Spillman); Hamilton and Marion (Wilson); Decatur (Ballard); Steuben (Bradner).

E. ANNUUS (L.) Pers. Daisy Fleabane. White-top.

Very abundant in fields, and often found in clover and timothy areas. Widely distributed throughout the State and ranked as a bad weed in many counties.

Flowers from May until in September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyneke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Fayette (Hessler); Knox (Spillman); Wabash (Jenkins); Hamilton and Marion (Wilson); Steuben (Bradner)

E. RAMOSUS (Walt.) B. S. P. Slender Daisy Fleabane. White-top.
(E. strigosus Muhl.)

Found in the same situations as the preceding, but more often invading woodlands. The form is not separated from *annuus* in many cases. Mr. Blatchley says: "This species and *E. annuus* are the most pernicious weeds with which the growers of timothy or clover have to contend."

Flowers from May until the late frosts.

Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Monroe and Vigo (Blatchley); Fayette (Hessler); Knox (Spillman); Putnam (MacDougal); Hamilton and Marion (Wilson).

LEPTILON Raf.

L. CANADENSE (L.) Britton. Horse-weed. Butter-weed.
(Erigeron Canadensis L.)

Widely distributed and very common throughout the State, in many localities being an annoying weed. Found in fields and in open, waste places. In many parts of the State the abandonment of a field is the signal for the appearance of this species in great abundance.

Flowers from June until after heavy frosts.

Tippecanoe (Cunningham); Jefferson (Barnes); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph and Wayne (Phinney); Daviess (Clements); Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

L. DIVARICATUM (Michx.) Raf. Low Horse-weed.
(Erigeron divaricatus Michx.)

Reported only from the extreme southern part of the State where it is occasionally found on the sandy banks of streams.

Flowers from June through September.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck).

DOELLINGERIA Nees.

D. UMBELLATA (Mill.) Nees. Tall, White Aster. Flat-topped Aster.
(Aster umbellatus Mill.)

The local range of this species has been considerably extended within the past few years. It is found in moist, even wet soil, exceptionally reaching a height of ten feet.

Its flowering season begins in July and probably continues until the frosts.

Jefferson (Barnes); Clark (Baird and Taylor); Jay (Phinney); Lake (Hill); Cass and Marshall (Hessler); Wabash (Jenkins); Steuben (Bradner).

IONACTIS Greene.

I. LINARIIFOLIUS (L.) Greene. Double-Bristled Aster. Stiff-leaved Aster.

(*Aster linariifolius* Hook.)

Found in dry, sandy soils in a few counties of the State. The habit of growth of the species is such as to lead to its easy recognition.

Flowering season from July through September.

Vigo and Lake (Blatchley); Cass (Hessler); Putnam (MacDougal).

PLUCHEA Cass.

P. CAMPHORATA (L.) DC. Spicy Fleabane.

This salt-marsh form is found on river banks in the extreme southern counties of the State.

Jefferson (Barnes); Gibson and Posey (Schneck).

P. PETIOLATA Cass. Inland Marsh Fleabane.

(*P. fetida* DC.)

In southern Indiana, in moist soil, often in woods.

Flowers from August until October.

Jefferson and Gibson.

ANTENNARIA Gaertn.

A. PLANTAGINIFOLIA (L.) Richards. Plantain-leaf Everlasting. Mouse Ear. White Plantain.

Abundantly distributed throughout our area, usually growing on dry slopes, or in dry, open woods. It very often completely covers patches of a fourth of an acre or more.

Flowering season from early April through June.

Jefferson (Barnes); Putnam (MacDougal); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe and Kosciusko (Coulter); Fayette (Hessler); Daviess (Clements); Hamilton (Wilson); Steuben (Bradner).

ANAPHALIS DC.

A. MARGARITACEA (L.) Benth. and Hook. Pearly Everlasting.
(*Antennaria margaritacea* Hook.)

In dry soil, in a few counties of the State. The range is probably greater than reported.

Flowers much later than the preceding, from July through September.

Gibson and Posey (Schneck); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Cunningham); Hamilton and Marion (Wilson).

GNAPHALIUM L.

G. OBTUSIFOLIUM L. Common Everlasting.
(*G. polycephalum* Michx.)

Throughout the State in dry, open places and also in dry woods.

Flowers in August and September.

Daviess (Clements); Tippecanoe (Wright); Clark (Baird and Taylor); Franklin (Meyncke); Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Monroe and Vigo (Blatchley); Fayette (Hessler); Knox (Spillman); Steuben (Bradner).

G. ULIGINOSUM L. Low Cud-weed.

Found in moist localities and of definite report from but a few counties.

Flowering season from July through September.

Jefferson (Barnes); Clark (Baird and Taylor); Noble (Van Gorder); Montgomery; Steuben (Bradner); Lake (Hill).

G. PURPUREUM L. Purplish Cud-weed.

In dry soil, chiefly in open woods. Well distributed, but never especially abundant.

Flowers from early in May, through the summer.

Jefferson (Barnes); Putnam and Union (MacDougal); Monroe and Vigo (Blatchley); Clark (Baird and Taylor); Franklin (Meyncke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Floyd (Barnes); Fayette (Hessler).

INULA L.

I. HELENIUM L. Elecampane.

In many counties of the State in old fields, along roadsides and on dry banks. More abundant in the northern counties of its range.

Flowering season from June until late in August.

Tippecanoe (Cunningham); Jefferson (J. M. Coulter); Putnam (MacDougal); Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Dearborn (Collins); Monroe and Vigo (Blatchley); Fayette (Hessler); Decatur and Shelby (Ballard); Round Lake (Deam); Hamilton and Marion (Wilson); Steuben (Bradner).

POLYMNIA L.

P. UVEDALIA L. Large flowered Leaf-cup.

In rich, shaded soils in various counties, chiefly southern. It is never abundant in any of its Indiana stations.

Flowering season, July and August.

Franklin (Meyneke); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Kosciusko (Chipman); Crawford (Blatchley).

P. CANADENSIS L. Small flowered Leaf-cup.

Of more general distribution than the preceding, but only abundant in exceptional stations. Its favorite location is in deep and shaded ravines in rich moist soil. A plant of very disagreeable odor.

Flowering season, June to September.

Jefferson (J. M. Coulter); Tippecanoe (Cunningham); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Franklin (Meyneke); Noble (Van Gorder); Putnam (MacDougal).

SILPHIUM L.

S. PERFOLIATUM L. Cup-plant. Indian cup.

Found in moist, rich soils, chiefly along the banks of streams. More abundant in the northern counties of its range.

Flowering season, July and August.

Tippecanoe (Cunningham); Kosciusko (Coulter); Putnam (MacDougal); Gibson and Posey (Schneck); Franklin (Meyneke); Jay, Delaware, Randolph, and Wayne (Phinney); Monroe and Vigo (Blatchley); Fayette (Hessler); Jefferson; Lake; Marion; Hamilton (Wilson).

S. INTEGRIFOLIUM Michx. Entire-leafed Rosin-weed.

Found in prairies and open fields in rather damp soil. Its more abundant distribution occurs in the northern part of its range.

Flowering season, August and September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Laporte (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck).

S. TRIFOLIATUM L. Whorled Rosin-weed.

In rich, damp woods or about the shaded margins of lakes. Chiefly northern in its reported range.

Flowers from the middle of July until in August.

Laporte (Barnes); Noble (Van Gorder); Round Lake (Deam); Clark (Baird and Taylor); Jefferson (Barnes); Cass (Hessler).

S. LACINIATUM L. Compass-plant. Pilot-weed.

In open or prairie regions, most frequently in rich, moist soils. Abundant in the northern counties of its range, much less so in the southern counties.

Flowering season from July through September.

Tippecanoe (Cunningham); Cass (Hessler); Jasper (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Noble (Van Gorder); Elkhart (Barnes).

S. TEREBINTHINACEUM Jacq. Prairie-dock.

Found in several counties of the State in prairies and dry woods, attaining its best development in sandy soils. Very much more abundant in the northern counties of its range.

Flowering season July until the middle of October.

Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Elkhart (Barnes); Kosciusko (Coulter); Tippecanoe (Wright); Hamilton (Wilson); Steuben (Bradner).

PARTHENIUM L.**P. INTEGRIFOLIUM L. American Fever-few. Prairie Dock.**

In dry, open places, reaching its best development in sandy soil. The chief distribution is in the southern counties of the State, not extending farther north than Laporte and Cass counties.

Flowering season from May until September.

Floyd (Clapp); Laporte (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Cass (Hessler); Vigo (Blatchley).

HELIOPSIS Pers.

H. HELIANTHOIDES (L.) B. S. P. False Sun-flower. Smooth Ox-eye.
(*H. laevis* Pers.)

Found in dry soils in considerable abundance throughout the State. Fence-rows and thickets apparently furnish the most suitable stations.

Flowering season, July and August.

Daviess (Clements); Jefferson (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Monroe and Vigo (Blatchley); Tippecanoe (Coulter); Fayette (Hessler).

H. SCABRA Dunal. Rough Ox-eye.

A more abundant form than the preceding, occurring in similar localities. While not reported from the extreme northern counties it is doubtless to be found throughout our area.

Flowering season, July and August.

Monroe and Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Jefferson (J. M. Coulter); Fayette (Hessler); Tippecanoe (Coulter).

ECLIPTA L.

E. ALBA (L.) Hassk.

Along streams and borders of ponds in moist or even wet soils. Quite widely distributed, and in favorable localities very abundant.

Flowering season from July until the frosts.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Johnson (Barnes); Tippecanoe (Cunningham); Hamilton and Marion (Wilson).

RUDBECKIA L.

R. TRILOBA L. Small-flowered Cone Flower.

Borders of streams and damp, low ground throughout the State. The great range of variation in the foliage leaf, as well as the showy floral heads, render the plant of easy recognition.

Flowering season from June through September.

Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney);

Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Putnam (MacDougal); Tippecanoe (Cunningham); Hamilton and Marion (Wilson).

R. SUBTOMENTOSA Pursh. Sweet Cone Flower.

The distribution of this form is such as to warrant the belief that it is to be found in all parts of the State, although there are definite reports from but a few counties. It is found on prairies or upon the banks of streams.

Flowering season, July to September.

Tippecanoe (Cunningham); Cass (Hessler); Jasper (Barnes); Gibson and Posey (Schneck); Knox (Spillman); Elkhart (Barnes).

R. HIRTA L. Black-eyed Susan. Meadow Cone Flower. Nigger-head.

In all parts of the State, being found in open places in either dry or damp soils. It is perhaps more abundant in dry soils. It varies widely in habit even in the same situation. Prof. Blatchley says: "Appears to be both an annual and biennial; in the former case lower and more simple stemmed and blooming in late autumn; as a biennial, stouter, more branched and blossoming early."

Flowers from early in June until the late frosts.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Clark (Baird and Taylor); Jay Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Noble (Van Gorder); Gibson and Posey (Schneck); Vermillion (Wright); Tippecanoe (Cunningham); Putnam (MacDougal); Kosciusko (Coulter); Hamilton (Wilson); Steuben (Blatchley).

R. FULGIDA Ait. Orange Cone Flower.

Reported only from the eastern part of the State by Dr. Phinney. The form is so characteristic as to scarcely admit of error in its determination. It is found usually in dry soil.

Flowers in August and September.

Jay, Delaware, Randolph, and Wayne (Phinney).

R. SPECIOSA Wenderoth. Show-Cone Flower.

Found in moist soils in a few counties of the State.

Flowers in our range late in August and in September.

Jefferson (J. M. Coulter); Fayette (Hessler); Kosciusko (Coulter).

R. LACINIATA L. Tall Cone Flower.

Found in moist, shaded localities in many counties. Usually abundant in the stations in which it occurs.

Flowering begins early in July and continues through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Harrison (Barnes); Monroe and Vigo (Blatchley); Owen and Putnam (MacDougal); Dearborn (Collins); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Noble (Van Gorder); Franklin (Meyncke); Cedar Lake (Deam); Hamilton (Wilson); Fayette and Cass (Hessler).

RATIBIDA Raf.**R. PINNATA (Vent.) Barnhart. Gray-headed Cone Flower.**

(*Lepachys pinnata* T. and G.)

Found in many counties of the State, but nowhere abundant. Frequents dry prairies and railway embankments.

Flowering season, June to September.

Vigo (Blatchley); Carroll (Coulter); Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Laporte (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Hamilton (Wilson); Steuben (Bradner).

BRAUNERIA Neck.**B. PURPUREA (L.) Britton. Purple Cone Flower.**

(*Echinacea purpurea* Moench.)

Found in various parts of the State, but never in great abundance. It reaches its best development in moist, rich soil, but is also often found in dry and sandy locations.

Flowering season from July until the frosts.

Tippecanoe (Cunningham); Cass (Hessler); Harrison and Floyd (Barnes); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Vigo (Blatchley).

B. PALLIDA (Nutt.) Britton. Pale-purple Cone Flower.

(*Echinacea angustifolia* DC.)

Confined to the extreme northern counties of the State, where it is found in dry, sandy soil in open places. Even in the localities cited the species is quite rare.

Flowering season, July through September.

Lake (Hill); Laporte.

HELIANTHUS L.

H. ANNUUS L. Common Sunflower.

This familiar form has escaped from civilization in many parts of the State. In its wild state it is much smaller than under cultivation. The species has considerable economic value, and is being quite largely cultivated in some parts of the country. "Its flowers yield honey and a yellow dye; its leaves fodder; its seeds an oil and food; and its stalks a textile fibre" (Britton and Brown). Locally it is somewhat largely cultivated for the oil derived from its seeds.

Flowering from early in July through the summer.

Vigo and Monroe (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyneke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Lake (Hill); Hamilton and Marion (Wilson); Steuben (Bradner).

H. SCABERRIMUS Ell. Stiff Sunflower.

(*H. rigidus* Desf.)

This western form seems to have obtained lodgment in the eastern counties. It doubtless first appeared as a migrant, and has since maintained itself, though spreading but slightly. Open places in dry soil.

Flowers in our range late in August; probably continuing through September.

Jay, Delaware, Randolph, and Wayne (Phinney).

H. OCCIDENTALIS Riddell. Few-leaved Sunflower.

Found sparingly in a few counties growing in dry, open places on prairies.

Flowering season, August and September.

Cass (Hessler); St. Joseph (Barnes); Vigo (Blatchley); Steuben (Bradner).

H. MICROCEPHALUS T. and G. Small Wood Sunflower.

(*H. parviflorus* Bernh.)

Well distributed through the State, and finding its favorite location in moist woods or upon the shaded banks of streams. It also occurs in moist prairies. Apparently more abundant in the southern part of its range.

Flowers from July through September.

Johnson (Barnes); Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Jefferson (J. M. Coulter); Franklin (Meyncke); Vigo and Monroe (Blatchley); Fayette (Hessler).

H. GIGANTEUS L. Tall or Giant Sunflower.

In swamps and wet meadows in many counties. Rather common in the localities in which it occurs.

Flowering season from middle of August until October.

Laporte (Barnes); Clark (Baird and Taylor); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Hamilton and Marion (Wilson); Vigo (Blatchley); Steuben (Bradner).

H. GROSSE-SERRATUS Martens. Saw-toothed Sunflower.

Dry soil in prairies and along roadsides and in fence-rows. In suitable locations it becomes very tall, Mr. Blatchley reporting a specimen twelve feet high.

Flowering season, August and September.

Jasper (Barnes); Vigo (Blatchley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Marion (Wilson).

H. DIVARICATUS L. Rough or Woodland Sunflower.

A characteristic form of easy recognition found in considerable abundance in many counties. It is most abundant in dry, light woods, although often found along the banks of streams. Upper leaves frequently in whorls of three.

Flowering season, July through September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Cass (Hessler); Daviess (Clements); Floyd (Clapp); St. Joseph (Barnes); Clark (Baird and Taylor); Franklin (Meyncke); Noble (Van Gorder); Vermillion (Wright); Lake; Vigo (Blatchley); Steuben (Bradner).

H. MOLLIS Lam. Hairy Sunflower.

Found in dry, sandy or sterile soil in various parts of the State. Easily recognized by the pubescence of the leaves, although extremely variable in our area. The character and amount of the pubescence varies in the individual plant in different stages of its growth.

Flowers August and September.

Harrison and Jasper (Barnes); Vigo (Blatchley); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Vermillion.

H. DORONICOIDES Lam. Oblong-leaved Sunflower.

An abundant form in several parts of the State. Indicative of dry soil.

Flowering season, August and September.

Jefferson (Barnes); Monroe (Blatchley); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Putnam (MacDougal).

H. DECAPETALUS L. Thin-leaved or Wild Sunflower.

One of the most abundant and widely distributed species of the genus. It is found along streams or in damp woods, reaching its greatest profusion and largest size in black loam soils. Usually as indicative of rich soil as of moisture.

Flowers from July through September.

Monroe (Blatchley); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Tippecanoe (Cunningham); Kosciusko (Coulter); Hamilton (Wilson); Carroll.

H. TRACHELIIFOLIUS Mill.

Found in dry soil along fence-rows or roadsides. Definitely reported from but few counties, though probably of general occurrence.

Flowering season August and September.

Jefferson (Barnes); Tippecanoe (Skinner); Vigo (Blatchley); Carroll.

H. STRUMOSUS L. Pale-leaved Wood Sunflower.

Reported from but few counties, but abundant where found in dry, coarse soil. In Tippecanoe found most abundantly on roadsides and in dry woods.

Flowering season July until October.

Jay, Delaware, Randolph, and Wayne (Phinney); Tippecanoe (Wright); Hamilton and Marion (Wilson); Carroll.

H. HIRSUTUS Raf. Stiff-haired Sunflower.

Well distributed throughout the State, especially in southern and central parts. Not reported north of Tippecanoe County. In dry soils, chiefly in woods or at their border. The densely hirsute stem furnishes a means of ready recognition.

Flowering season, July to October.

Harrison (Barnes); Vigo (Blatchley); Daviess (Clements); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Jasper.

H. LÆTIFLORUS Pers. Showy Sunflower.

A widely distributed and common form. Indicative of dry soil, and usually found in prairies or open barrens. Found also in thickets and the border of woods, but in much less profusion in such localities.

Flowering season July through September.

Jefferson and Jasper (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Dearborn (Collins); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Tippecanoe (Cunningham); Steuben (Bradner); Jasper.

H. TOMENTOSUS Michx. Woolly Sunflower.

Reported from two counties in different parts of the State. The species is eastern in its mass distribution, but has been reported from Illinois. The species is admitted upon rather scant specimens which seem to justify the reference.

Collected in flower on the fifteenth of August.

Clark (Baird and Taylor); Steuben (Bradner).

H. TUBEROSUS L. Jerusalem Artichoke. Earth Apple.

This species occurs in the southern part of the State in considerable abundance in moist, alluvial soils. Less common northward. Extensively grown in some places for its edible tubers.

Flowers in September and October.

Vigo (Blatchley); Franklin (Meyncke); Gibson and Posey (Schneck); Cass (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

VERBESINA L.**V. HELIANTHOIDES Michx.**

More abundant in the northern than in the southern counties, though found in fair abundance in all parts of the State. Found in dry soil on prairies or in thickets.

Flowers in June and July.

Kosciusko (Coulter); Tippecanoe (Wright); Franklin (Meyncke); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Vigo (Blatchley); Marion.

V. ALTERNIFOLIA (L.) Britton.

(*Actinomeris squarrosa* Nutt.)

Distributed throughout the State occurring in low, moist, rich soils preferring slightly shaded locations. In our region the stem is always decidedly winged, furnishing an easy means of recognition. Much more abundant than the preceding. In some localities the dominant form over large areas.

Flowers in August and September.

Tippecanoe and Montgomery (Cunningham); Kosciusko (Coulter); Jefferson (Barnes); Union and Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Monroe and Vigo (Blatchley); Fayette (Hessler).

COREOPSIS L.**C. PALMATA Nutt. Stiff Tickseed.**

Confined to the northern part of the State, where it occurs rather abundantly in dry, sandy soil. Not reported south of Cass County.

Flowers in June and July.

Cass (Hessler); St. Joseph and Laporte (Barnes); Lake (Hill).

C. LANCEOLATA L. Lance-leaved Tickseed.

Found in dry, sandy soil usually on ridges or knolls in a few counties. Never abundant.

Flowers as early as May, and collected as late as August.

Vigo (Blatchley); Lake; Marion; Steuben (Bradner).

C. AURICULATA L. Lobed Tickseed.

Found chiefly in the southern part of the State in damp woods or along streams. Definitely reported from only two counties, but found in most of the river counties.

Flowering specimens collected in May.

Clark (Baird and Taylor); Steuben (Bradner).

C. TRIPTERIS L. Tall Tickseed.

Of wider distribution and greater abundance than any other species of the genus. It occurs most frequently in damp woods and thickets. It also grows along railways and roadsides in which situation it occasionally reaches a height of ten feet. In denser shades it is a much shorter, bushier form.

Flowers from July to October.

Tippecanoe (Cunningham); Cass (Hessler); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (Barnes); Gibson and Posey (Schneck); Noble (Van Gorder); Clark (Baird and Taylor); Kosciusko (Coulter); Franklin (Meyncke); Vigo (Blatchley); Hamilton and Marion (Wilson); Steuben (Bradner).

BIDENS L.

B. LEVIS (L.) B. S. P. Larger Bur-marigold.

(*B. chrysanthemoides* Michx.)

In swamps or low, wet alluvial soils. Widely distributed through the State, and abundant in the stations in which it occurs.

Flowers from August until in November.

Jefferson (Barnes); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Marion (Moffatt).

B. CERNUA L. Smaller Bur-marigold.

Common in wet soils and shallow ditches throughout the State. Flowers from July until late in October.

Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Tippecanoe (Cunningham); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner); Jefferson.

B. CONNATA Muhl. Swamp Beggar-ticks.

Very abundant in marshes and wet soils, sometimes occupying almost exclusively tracts of acres in low, wet bottom lands.

Flowers in August and continues its season until October.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Hamilton and Marion (Wilson); Steuben (Bradner).

B. DISCOIDEA (T. and G.) Britton.

(*Coreopsis discoidea* T. and G.)

Found in Indiana only in the cypress swamps, and there of exceptional occurrence.

Flowering specimens collected July 28th.

Gibson.

B. FRONDOSA L. Common Beggar-ticks.

In moist soil, and a very annoying weed, in waste fields and in fence corners of cultivated fields. Wherever it obtains a foothold it multiplies rapidly, often occupying almost exclusively large areas.

Flowers from July through September.

Jefferson (J. M. Coulter); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Daviess (Clements); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Tippecanoe (Cunningham); Kosciusko (Coulter); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

B. BIPINNATA L. Spanish Needles.

Abundant in almost every situation. Often a troublesome weed in cultivated fields. With us it reaches its fullest development in size and numbers in moist soil.

Flowering from July through September.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Knox (Spillman); Hamilton and Marion (Wilson).

B. TRICHOSPERMA (Michx.) Britton. Tall Tickseed Sunflower.

(*Coreopsis trichosperma* Michx.)

In swamps and wet lowlands throughout the State. Nowhere especially abundant.

Flowering season, August and September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Monroe (Blatchley); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meyncke); Round Lake (Deam); Lake and Porter (Hill); Hamilton and Marion (Wilson); Steuben (Bradner).

B. TRICHOSPERMA TENUILOBA (Gray) Britton.

(*Coreopsis trichosperma tenuiloba* Gr.)

The prevailing form in the dune region of the southern shore of Lake Michigan.

Flowering season, same as preceding.

Lake and Porter (Hill).

B. ARISTOSA (Michx.) Britton. Western Tickseed Sunflower.*(Coreopsis aristosa Michx.)*

Not uncommon in wet soils in many counties of the State. Somewhat more abundant in the northern part of its range.

Flowers in August and September.

Gibson and Posey (Schneck); Noble (Van Gorder); Montgomery (Hussey); Fayette (Hessler); Knox (Spillman); Tippecanoe (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

B. BECKII Torrey. Water Marigold.

First reported as occurring in the State by Mr. W. W. Chipman. The following year an additional station was detected by Mr. C. C. Deam. Where the plant occurs at all, it is found in considerable abundance. It will probably be found to have additional stations especially in the region of the smaller lakes.

Flowers in August and September.

Kosciusko (Chipman); Round Lake (Deam); Steuben (Bradner); Marshall (Hessler).

HYMENOPAPPUS L'Her.**H. CAROLINENSIS (Lam.) Porter.***(H. scabiosæus L'Her.)*

The only record in the State is the following: "Dry, sandy hillsides; rare. Taken only on the hillside northeast of the Seventh Street bridge across Lost Creek, May 31, 1890." This is one of a number of forms added to the State flora by Prof. W. S. Blatchley, who has lost no opportunity to increase the knowledge of the natural history of the State.

Vigo (Blatchley).

HELENIUM L.**H. AUTUMNALE L. Sneezeweed.**

In swamps and low, wet grounds throughout the State. Abundant wherever found.

Flowering season, August to October.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Noble (Van Gorder); Tippecanoe (Cunningham); Putnam (MacDougal); Hamilton and Marion (Wilson).

H. NUDIFLORUM Nutt.

Less widely distributed and much less frequent than the preceding. It is usually found in moist places, but thrives well in dry soil if rich. It is confined to the central and southern counties.

Flowering begins in June and continues until the frosts.

Vigo (Blatchley); Monroe (Dudley); Jay, Delaware, Randolph, and Wayne (Phinney); Gibson and Posey (Schneck); Marion and Jefferson.

DYSODIA Cav.

D. PAPPOSA (Vent.) A. S. Hitchcock. Fetid Marigold. Yellow Dog-fennel.

(*D. chrysanthemoides* Lag.)

Widely distributed and abundant throughout the State. Many roadsides are for miles covered with this species. In this situation it prefers the gravelly soils. Where there is more moisture it affects sandy banks. It is in many places apparently replacing the common dog fennel, *Anthemis Cotula*. Characterized by its strong, unpleasant odor.

Flowers from July through October.

Knox (Spillman); Kosciusko and Tippecanoe (Coulter); Cass (Hessler); Harrison, Jennings, and Johnson (Barnes); Putnam and Union (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Clark (Baird and Taylor); Franklin (Meynecke); Marion; Jefferson; Monroe and Vigo (Blatchley); Fayette (Hessler); Hamilton (Wilson).

ACHILLEA L.

A. MILLEFOLIUM L. Yarrow.

Common throughout the State, being found in greatest abundance along roadsides, and in old fields and meadows. It does well by the side of a road in hard dry soil, and dust-laden air, and thrives equally in moist soil at the edge of a pond or small lake.

Commencing to flower in June, it continues until the heaviest frosts.

Jefferson (Barnes); Monroe and Vigo (Blatchley); Fayette (Hessler); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Dearborn (Collins); Franklin (Meynecke); Gibson and Posey (Schneck); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Kosciusko (Coulter); Vermillion (Wright); Knox (Spillman); Decatur and Shelby (Ballard); Hamilton and Marion (Wilson); Steuben (Bradner).

ANTHEMIS L.

A. COTULA L. Common Dog-fennel. Mayweed.

Very abundant, and very annoying, in almost every part of the State. In dry soil along roadsides or in waste places. Easily recognized by its finely dissected leaves and disagreeable odor.

Flowers continuously from June until the heavy frosts.

Monroe and Vigo (Blatchley); Fayette (Hessler); Clark (Baird and Taylor); Dearborn (Collins); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meynecke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Putnam (MacDougal); Tippecanoe (Cunningham); Vermillion (Wright); Kosciusko (Coulter); Hamilton and Marion (Wilson); Steuben (Bradner).

A. ARVENSIS L.

Adventive from Europe. Seemingly established in a few localities.

Flowers July to September.

Monroe (Blatchley); Clark (Baird and Taylor).

CHRYSANthemum L.

C. LEUCANTHEMUM L. Ox-eyed Daisy. Margarine. White Daisy.

A troublesome weed in some of the southern counties, but becoming much less common in the northern part of the State. Found in dry soils in waste places, also invading pastures and meadows. Very difficult to eradicate when it has obtained a foothold. Spread in some instances because of the use of the flower in decoration, large patches having been noted as springing up at the place where the wilted flowers were thrown. A very handsome form.

Flowers from May through October.

Daviess (Clements); Jefferson (Barnes); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meynecke); Dearborn (Collins); Putnam (MacDougal); Kosciusko (Chipman); Hamilton (Wilson); Floyd and Monroe; Marion (Moffatt).

C. PARTHENIUM (L.) Pers. Common Feverfew.

Confined to the southern counties where it is found sparingly in waste places adjoining old dwellings. It seems able to maintain itself, but does not spread to any extent.

Flowers in June and July.

Gibson and Posey (Schneck); Clark (Baird and Taylor).

TANACETUM L.

T. VULGARE L. Tansy.

Established in almost every part of the State, and becoming more and more common. Chiefly along roadways or near abandoned gardens.

Flowers from July through September.

Fayette (Hessler); Steuben (Bradner); Daviess (Clements); Clark (Baird and Taylor); Jay, Delaware, Randolph, and Wayne (Phinney); Franklin (Meyncke); Gibson and Posey (Schneck); Jefferson (J. M. Coulter); Noble (Van Gorder); Tippecanoe (Cunningham); Putnam (MacDougal); Hamilton and Marion (Wilson).

ARTEMISIA L.

A. CAUDATA Michx. Tall or Wild Wormwood.

Confined to sandy soil in the northern part of the State. A character plant of the upper beach stretches in Lake and Porter counties. Only one report of its occurrence inland, in which case the station is on the sandy beach of an extinct lake.

Flowers from July until October.

Fulton and Cass (Hessler); Lake (Hill); Porter (Cowles).

A. CANADENSIS Michx. Canada Wormwood.

Found associated with the preceding upon the upper beach of the shores of Lake Michigan.

Flowering season as in the preceding.

Lake (Hill); Porter (Cowles).

A. ABSINTHIUM L. Common Wormwood.

Very occasionally established in waste places and barely maintaining itself from year to year.

Flowers July to October.

Gibson and Posey (Schneck); Fayette (Hessler); Steuben (Bradner).

A. ABROTANUM L.

On the bank of the Ohio River, where it seems to have become firmly established.

Collected in flower the 8th of August.

Jefferson (J. M. Coulter).

A. ANNUA L.

In the southwestern counties, where it is quite abundant in dry waste places.

Flowering July and August.

Gibson.

A. BIENNIS Willd.

A coarse weed with a disagreeable odor somewhat common in dry, sandy soil in the southern part of the State, less so in the northern counties.

Flowers in August and September.

Jefferson (J. M. Coulter); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Fayette (Hessler).

ERECHTITES Raf.**E. HIERACIFOLIA (L.) Raf. Fire Weed.**

Borders of woods and thickets, especially abundant where the soil has been burned over. It is found in rich, rather moist, soils.

Flowers from July through September.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougall); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Dearborn (Collins); Cedar Lake (Deam); Fayette (Hessler); Steuben (Bradner); Montgomery (Coulter).

MESADENIA Raf.**M. RENIFORMIS (Muhl.) Raf. Great Indian Plantain.**

(*Cacalia reniformis* Muhl.)

Found in rich, moist soils. Confined so far as reports go, to the southern counties of the State.

Flowering season July through September.

Jefferson (J. M. Coulter); Clark (Baird and Taylor); Monroe and Vigo (Blatchley); Putnam (MacDougall); Fayette (Hessler); Hamilton (Wilson); Marion (Moffatt).

M. ATRIPLICIFOLIA (L.) Raf. Pale Indian Plantain.*(Cacalia atriplicifolia L.)*

In woods and on shaded hillsides in many counties of the State, but nowhere especially abundant.

Flowers from July through September.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson (Barnes); Cass and Fayette (Hessler); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph and Wayne (Phinney); Franklin (Meyncke); Vigo (Blatchley); Steuben (Bradner); Monroe; Lake (Hill).

M. TUBEROSA Nutt.

Confined to the northern counties of the State, where it occurs sparingly in marshes and wet places. Its range is doubtless much larger than indicated by the reports.

Flowering season, June to August.

Tippecanoe (Cunningham); Cass (Hessler); Laporte (Barnes); Lake and St. Joseph.

SYNOSMA Raf.**S. SUAVEOLENS (L.) Raf.** Sweet-scented Indian Plantain.*(Cacalia suaveolens L.)*

In moist woods or along streams, not extending farther north than Tippecanoe County.

Flowers in August and September.

Tippecanoe (Cunningham); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Wabash (Jenkins); Porter and Marion.

SENECIO L.**S. OBOVATUS Muhl.** Round-leaf Squaw Weed.*(S. aureus obovatus T. and G.)*

In moist soils and on banks of streams. Not especially common, but found in all parts of the State.

Flowers from April through June.

Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyncke); Putnam (MacDougal).

S. AUREUS L. Golden Ragwort. Swamp Squaw Weed.

One of the most common of our early composites. Found in marshes, on banks of streams and in damp ravines. Of wide distribution and quite common.

Flowers in April, continuing until July.

Tippecanoe (Cunningham); Daviess (Clements); Jefferson and Clark (Barnes); Monroe (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Franklin (Meyncke); Knox (Spillman); Fayette; Hamilton (Wilson); Steuben (Bradner).

S. PALUSTRIS (L.) Hook. Pale Ragwort.

In swamps and wet places in a few counties, chiefly southern and western. The species has evidently entered the flora from the west.

Flowers in June and July.

Clay and Putnam (MacDougal).

S. LOBATUS Pers. Butterweed.

The first record of this species was made by Mr. Blatchley, whose special studies of the composites have added much to our knowledge of the family in the State. Found growing at margin of ponds.

Collected in flower May 21st.

Vigo (Blatchley); Knox (Spillman).

ARCTIUM L.**A. LAPP A L. Burdock.**

Widely distributed and very abundant in all parts of the State. It is very common in abandoned fields and dooryards, and is difficult to exterminate.

Flowers from July through the frosts.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Franklin (Meyncke); Dearborn (Collins); Decatur and Shelby (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

CARDUUS L.

C. LANCEOLATUS L. Common Thistle.*(Cnicus lanceolatus Willd.)*

The most abundant and widely distributed form of the genus. Occurs everywhere, but especially abundant in waste or abandoned lands and along roadsides.

Flowering season, July until frosts.

Tippecanoe (Cunningham); Jefferson (Barnes); Putnam (MacDougal); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Franklin (Meyneke); Dearborn (Collins); Daviess (Clements); Decatur and Shelby (Ballard); Fayette (Hessler); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ALTISSIMUS L. Tall or Roadside Thistle.*(Cnicus altissimus Willd.)*

Widely distributed throughout the State, occurring in locations similar to the preceding species. It is somewhat more abundant in the northern counties of the State.

Flowers in August and September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Daviess (Clements); Vigo (Blatchley); Gibson and Posey (Schneck); Jay, Delaware, Randolph, and Wayne (Phinney); Jefferson (J. M. Coulter); Clark (Baird and Taylor); Franklin (Meyneke); Fayette (Hessler); Hamilton (Wilson); Steuben (Bradner); Marion (Moffatt).

C. DISCOLOR (Muhl.) Nutt. Field Thistle.*(Cnicus altissimus discolor Gray.)*

In similar situations, though less common and less widely distributed.

Flowers from August until November.

Elkhart (Barnes); Vigo (Blatchley); Putnam (MacDougal); Gibson and Posey (Schneck); Daviess (Clements); Fayette (Hessler); Steuben (Bradner).

C. VIRGINIANUS L.*(Cnicus Virginianus Pursh.)*

In dry, shaded localities in the eastern counties of the State. Evidently has entered the flora from the east.

Flowers in May continuing through September.

Jay, Delaware, Randolph, and Wayne (Phinney).

C. PITCHERI (Torr.) Porter.

(*Cnicus Pitcheri* Torrey.)

Found only in the sandy soils in the northern counties. One of the prominent members of the upper beach flora. Not reported inland.

Flowers July and August.

Lake (Hill); Porter (Cowles).

C. UNDULATUS Nutt. Wavy-leaved Thistle.

(*Cnicus undulatus* Gray.)

In northern part of State on plains and prairies.

Flowers from June until September.

Lake (Hill).

C. ODORATUS (Muhl.) Porter. Pasture Thistle.

(*Cnicus pumilus* Torrey.)

Occurring sparingly in fields in a few counties.

Flowers in August and September.

Dearborn (Collins); Lake (Hill); Marion (Wilson).

C. SPINOSISSIMUS Walt. Yellow Thistle.

(*Cnicus horridulus* Pursh.)

Reported from a single station by Dr. MacDougal and specimen in DePauw herbarium. Evidently a migrant. No additional record since original collection.

Putnam (MacDougal).

C. MUTICUS (Michx.) Pers. Swamp Thistle.

(*Cnicus muticus* Pursh.)

In swamps and wet soils in many counties of the State. Much more abundant in northern than in southern counties.

Flowers in August and September.

Tippecanoe (Cunningham); Kosciusko (Coulter); Noble (Van Gorder); Jay, Delaware, Randolph, and Wayne (Phinney); Vigo (Blatchley); Lagrange (Barnes); Cedar Lake (Deam); Knox (Spillman); Hamilton and Marion (Wilson); Steuben (Bradner).

C. ARVENSIS (L.) Robs. Canada Thistle.

(*Cnicus arvensis* Hoff.)

Found in fields and waste places in many parts of the State. It is usually found in dry soil and not only maintains itself but spreads rapidly. More abundant north. Easily recognized by its small, compact head.

Flowers from June through September.

Cass (Hessler); Putnam (MacDougal); Jay, Delaware, Randolph, and Wayne (Phinney); Noble (Van Gorder); Clark (Baird and Taylor); Kosciusko (Coulter); Jefferson; Lake, Wabash and Marion (Blatchley); Carroll; Hamilton (Wilson); Steuben (Bradner).

ONOPORDON L.

O. ACANTHIUM L. Scotch Thistle.

Established in a few localities along railroads but not spreading. Herbarium specimens from but few counties. Thus far confined to central and southern parts of the State.

Flowers in August and September.

Clark (Baird and Taylor); Jefferson (J. M. Coulter); Marion (Hessler).

CENTAUREA L.

C. CYANUS L. Corn Flower.

Found escaped from gardens and established in a few counties in the southern part of the State.

Flowers in July and September.

Clark (Baird and Taylor); Gibson and Posey (Schneck); Monroe; Steuben (Bradner); Fayette (Hessler).

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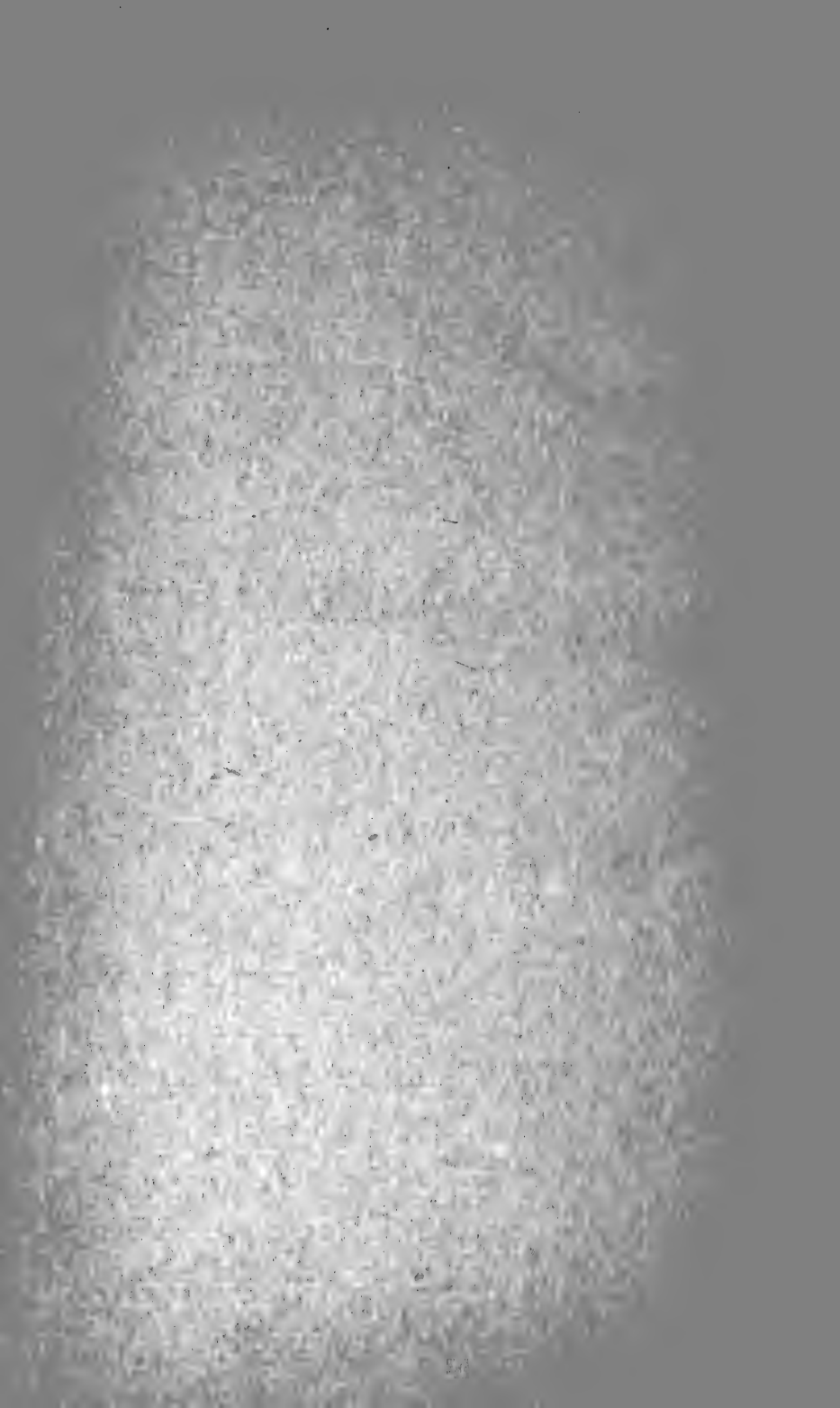
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